Erasmus Centre for Data Analytics

# Erasmus Centre for Data Analytics

## Expert Practice *Retail Analytics*

# Contents

# Retail Analytics: Introduction

Dr. Robert P. Rooderkerk

*Academic Director Retail Analytics, Erasmus Centre for Data Analytics*

*Academic Director MScBA Business Analytics & Management, Rotterdam School of Management*

*"The retail value chain has seen an influx of new technologies that have led to an abundance of data. Unlocking the potential of these data for improved decision making requires the successful implementation of advanced analytics solutions.*

*The retail analytics lab designs new advanced analytics solutions that can help companies in the retail value chain make better data-driven decisions faster.*

# The Retail Analytics Lab: Overview

Erasmus Centre for Data Analytics








We are an international group of scientists working on managerially important topics related to retail analytics. We combine deep domain knowledge of many aspects of retail with hands-on experience with advanced analytics.

TRANSPORTATION RESEARCH

JOURNAL of MARKETING RESEARCH

EUROPEAN JOURNAL OF OPERATIONAL RESEARCH

JOURNAL OF OPERATIONS MANAGEMENT

MARKETING SCIENCE

MANAGEMENT SCIENCE

California Management Review

TRANSPORTATION SCIENCE

POMS PRODUCTION AND OPERATIONS MANAGEMENT

# The Retail Analytics Lab: Overview

Erasmus Centre for Data Analytics

The Retail Analytics Lab aims to:

1. Facilitate interactions between academia and retail practice
2. Disseminate and increase the impact of academic research

Collaboration opportunities can take different shapes:

- Data sharing and research collaboration
- Contract research/consulting
- Research funding (e.g., PhD projects)
- Guest lectures
- Use of data sets for educational purposes

# Team // research interests

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**Robert Rooderkerk**, Associate Professor and Director // retail analytics, omnichannel retail, marketing-operations interface, assortment planning, new product development, store analytics

**René de Koster**, Professor // warehousing, robotics, material handling, container terminal operations, behavioral operations, retail operations, and sustainable logistics

**Niels Agatz**, Associate Professor // last-mile, ridesharing, drone delivery, on-demand delivery, omnichannel,, sustainable logistics
**Debjit Roy**, Associate Professor // restaurant analytics, transportation, warehousing, container terminal operations
**Remy Spliet**, Associate Professor // last-mile logistics, retail transport, sustainable logistics

**Michael Becker-Peth**, Assistant Professor // inventory management, behavioral operations management
**Jelle de Vries**, Assistant Professor // restaurant analytics, warehousing, behavioral operations management, behavior in truck transportation
**Müge Tekin**, Assistant Professor // competitive intelligence, location analytics, restaurant analytics

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# Examples of Collaboration with Practice

# Omnichannel retailing: making smarter choices

*Interviews with* ***Robert Rooderkerk and Marijn van Weele***

**Selecting the right assortment of products to carry is a perennial challenge for most retailers. Even for online retailers, distribution centre space and shoppers' mental bandwidth present constraints. Faced with too many choices, the consumer will shy away from buying anything at all.**

Until a few years ago, Coolblue, the fast-growing omnichannel retailer based in Rotterdam, had dealt with the issue of assortment the way most retailers always have: by making decisions about what to carry based on supplier discussions and managers' gut feelings.

But as the business grew, this traditional approach had become unsustainable. In certain departments, shoppers were being inundated with options – nearly 200 kinds of power banks, for example. 'We were basically confusing the customers with a lot of options that for them are very similar. This is not really a good way to help our customers, so we started asking, how can we make smarter choices?' recalled Marijn van Weele, Head of Margin Optimization (Assortment, Pricing, Forecasting, Bid Management).

This sounds like an easy question to answer, but it isn't. In fact, Coolblue faced a dilemma retailers often face: it's easy to cut stock keeping units (SKUs), but what if some of those choices satisfied very particular needs? How could van Weele be sure that the effort to cut complexity wouldn't actually reduce sales?

## An introduction

As he wrestled with this issue, a colleague invited van Weele to an evening seminar on assortment planning led by Robert Rooderkerk, Associate Professor in the Department of Technology and Operations Management at RSM.

After the seminar, the two continued to speak about 'our shared passion for assortment related challenges,' Rooderkerk remembers. This introduction began an ongoing dialogue, in meetings both at RSM's campus and at Coolblue's offices. Those meetings 'first focused on Marijn sharing challenges and me discussing state-of-the-art research on assortments,' Rooderkerk said.

Rooderkerk also told van Weele about an analytics tool for assortment optimisation he had developed while working on a methodology to optimise the composition of grocery store assortments. The analytics he developed on that project made it possible to evaluate the precise degree of overlap in the attributes of any two products in a given assortment – for instance, whether two kinds of laundry detergent did more or less the same thing, or had different benefits.

Rooderkerk believed that his tool could be adapted to handle a much larger number of products and a larger number of attributes than those he had programmed it to handle. In theory, Rooderkerk thought, it should work as well for consumer electronics at an online store as for consumer package goods in a grocery store. If he could prove that it worked on power banks as well as it did on potato soup, he could help many companies shrink their overall number of SKUs without reducing customers' meaningful choices.

But he needed real retail data to validate and refine his algorithm – and he realised that Coolblue might be the perfect candidate.

## Improvements every day

Their collaboration started small. 'Coolblue has a good motto, which is to try to make a small improvement or at least some improvement every day. And so that's how we started,' Rooderkerk said.

The first tangible product of their collaboration was a joint lecture at RSM on the theory and practice of assortment planning. Rooderkerk also sent a master's student to work at Coolblue on assortment issues, jointly supervised by him and van Weele.

Since then, the two have moved on to more complex and ambitious projects. For example, understanding how to make his tool work for sorting decisions in a complex category, such as laptops, which have more than 200 features.

The tool has made a dramatic difference to Coolblue. 'Overall, we have reduced our assortment substantially,' said spokeswoman Ottelien van Pelt, 'both by reducing product types in the assortment and the number of products within a product type.'

In certain categories, such as power banks, van Weele's team has reduced the assortment dramatically. 'However,' van Pelt said, 'there are also product types where we did the opposite and expanded the assortment.'

In laptops, for example, the data revealed that customers were searching for laptops with specifications that suppliers had not satisfied, such as a very high-end MacBook with highly enhanced capabilities. Now, since advising their suppliers about the spots they were missing, they have new hit products that sell out very quickly, said van Pelt.

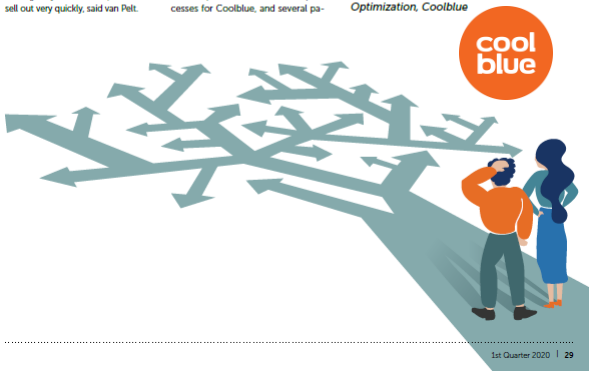
In addition to helping Coolblue improve its efficiency, the Coolblue-RSM collaboration has enabled Rooderkerk to not only validate and extend the capabilities of his assortment tool but to begin working on new assortment tools as well. 'We have looked at other dimensions of assortment structure that, together with assortment size, affect the number of website visitors and conversion,' he said. So far, their research has shown that both the structure of a category's assortment and the number of choices offered matter.

The collaboration has yielded practical benefits to both partners: more sophisticated assortment processes for Coolblue, and several papers for Rooderkerk – two published, and one under review, on omnichannel assortment planning, marketing-operations challenges in omnichannel retail settings, and finally, the path of new product development in an omnichannel world.

In addition, Rooderkerk, who is also Academic Director of RSM's new MSc in Business Analytics & Management, said he has gained a better sense of the skills that he wants the students in the programme to develop. 'Besides soft skills,' he said, 'they need an agile mindset capable of rapid prototyping, a good understanding of the interdependencies between different firm functions, particularly marketing and operations and different applications, especially assortment and pricing.'

*"We were basically confusing the customers with a lot of options that for them are very similar."*

***Marijn van Weele, Head of Margin Optimization, Coolblue***








RSM Discovery 37
Management Knowledge

# Omnichannel retailing: making smarter choices *(continued)*

*Interviews with* ***Robert Rooderkerk and Marijn van Weele***

## Assorted answers

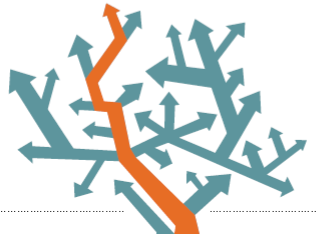
Today, Rooderkerk and van Weele continue to work on the problem of assortment for an omnichannel retailer, and have just begun a project using Coolblue's data. Their collaboration is also becoming more central to Rooderkerk's research. Now, he says, he is working directly on the Coolblue research with his colleagues, and not delegating it to his graduate students.

The executive and the academic are thus working together now to try to answer a variety of questions that are important to Coolblue specifically and next-generation retail generally. For example, are the assortment dynamics the same for Coolblue's 11 physical stores as for its online store, or should Coolblue have a different assortment strategy in its physical stores? How does blurring the line between online and bricks and mortar stores affect assortment? What products should Coolblue display in the store, given that space is limited and taking into account the fact that consumers might inspect a product in store but then buy online?

As for the Coolblue-RSM collaboration, the assortment seems optimal: Coolblue has less inventory to manage, Coolblue's customers have fewer but better choices to make, and RSM has new insights into the challenges of assortment and an advanced set of analytics tools that can benefit retailers everywhere. ■

*"Coolblue has a good motto, which is to try to make a small improvement or at least some improvement every day. And so that's how we started."*

***Robert Rooderkerk, Associate Professor, Department of Technology and Operations Management, RSM***



***Robert Rooderkerk*** *is Associate Professor, Department of Technology and Operations Management, Rotterdam School of Management, Erasmus University.*
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***Coolblue*** ***www.coolblue.nl***

# City Logistics Lab (Cilolab)

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CILOLAB CITY LOGISTICS LAB

ONDERZOEKSLIJNEN MEEDOEN? PARTNERS NIEUWS PROJECTRESULTATEN HUB CONCEPTEN CONTACT

## Partners

Onderstaande partijen hebben elkaar gevonden om vanuit hun unieke expertise en positie een bijdrage aan het CILOLAB Living Lab te leveren.

Vervoerders, verladers, logistieke dienstverleners, hub exploitanten en kennisinstellingen werken in het CILOLAB Living Lab samen met gemeentes om in deze gemeentes tot haalbare en schaalbare zero emissie stadslogistieke oplossingen te komen.

TLN · Gemeente Delft · on · Gemeente Utrecht · Erasmus University Rotterdam Make it happen.

Den Haag · BREYTNER ZERO EMISSION TRANSPORT · IT CAMPUS ROTTERDAM · Hogeschool van Amsterdam · evofenedex

Netwerk Benelux · BS BODE SCHOLTEN · ORTEC OPTIMIZE YOUR WORLD · Zwolle · TNO

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# Examples of relevant publications (incl. links)

# Omnichannel retail

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- Omnichannel Assortment Planning – book chapter highlighting the challenges involved in omnichannel assortment planning at the strategic, tactical, and operational level.
- New Product Development in an Omnichannel World – article explaining how the new product development process at manufacturers is changing in an omnichannel world.
- Challenges at the Marketing–Operations Interface in Omni-Channel Retail Environments – the omnichannel business model requires more interaction between the marketing and operations functions of the firm to address the challenges on their interface. This article highlights these challenges and provides some directions on how to tackle them.


New Product
Development

# Omnichannel distribution and fulfillment

Erasmus Centre for Data Analytics

- Optimizing Omni-Channel Fulfillment with Store Transfers - Exploiting spare capacity in vehicles replenishing store inventories to reduce online order fulfillment cost by transferring online orders to these vehicles at one or more of the stores visited.
- Anticipatory shipment for pickup point supply - Methods to decide which items to ship to (store) pickup points in anticipation of demand

# Online retail/last-mile logistics

Erasmus Centre for Data Analytics

- The time window assignment vehicle routing problem - Methodology to select time slots for retail operations.
- E-fulfillment and multi-channel distribution–A review - Overview of challenges and decision support models for e-commerce order fulfillment and multi-channel distribution.
- Optimization approaches for the traveling salesman problem with drone - Methods to combine delivery operations by an autonomous drone and a regular delivery truck

# Restaurant Analytics

Erasmus Centre for Data Analytics

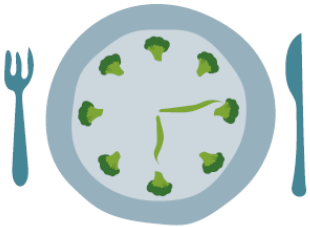
- Worth the wait? How restaurant waiting time influences customer behavior and revenue – Article combining empirical analyses and simulations to demonstrate the impact of waiting time on customer behavior, and to estimate the long-term revenue implications of making customers wait.
- Rejection is a challenge: leveraging customer segmentation in restaurant reservations to boost revenue (finished working paper) – Article investigating the determinants of customer no-show and cancellation behavior, and deriving restaurant reservation management strategies that can enhance revenue
- Optimal location for competing retail service facilities – Analytical approach to solve the location problem for retail service facilities, consumer-facing storefronts, specifically restaurants, that provide a service and compete with other retailers to some degree or the other.


Source image:
https://wptavern.com/happytables-pivots-to-provide-restaurant-analytics-and-insights

# Customer loyalty and queuing: was it worth the wait?

By **Jelle De Vries and Debjit Roy**

**The deferment of gratification can be an admirable trait in those of a religious disposition. It is probably not, however, what most of us want to practise when going out for dinner on a Saturday evening with friends and family. But how does waiting time affect customers, and can restaurant owners turn queuing to their advantage?**



*"For the provider of the service, the ability to generate additional revenue from the people waiting shows there can be a positive in making them wait..."*

Waiting time has come in for a degree of academic and other study down the decades, but probably deserves further in-depth investigation. The research to date focuses mostly on two very clear perspectives. One, that of the service provider. Two, that of the consumer.

From the provider's point of view, the emphasis is usually on the quantitative. How many tables does the restaurant have? How might they be configured? For one diner? For two? Three, four, five, six, seven, eight or even more? How many customers are waiting? How many staff are on duty to meet their needs? What will happen if the equation is changed so that there are more staff and/or fewer customers?

From the customer's point of view, the emphasis is usually on the qualitative. People see waiting as a core element of the experience, which, if handled correctly by the service provider, can even enhance the experience. A classic example almost inevitably arises in conversation with people who have visited one of the globally known Disney resorts as part of a holiday of a lifetime.

They will almost always say they had to queue for hours, only managed to experience a few of the rides they had hoped to and spent a fortune. But they almost always say they had a great time. For the consumer, the length of the wait and the overall enjoyment are all part of the experience, suggesting that, as the traditional proverb puts it, it can be better to travel than to arrive.

### Waiting can be profitable

For the provider of the service, the ability to generate additional revenue from the people waiting shows there can be a positive in making them wait. If only to persuade them to part with additional cash premium for the fairground equivalent of speedy boarding. And recent research of queuing to buy cupcakes indicates that the longer people queued, the more cupcakes they eventually went on to buy. It seems that people want to justify to themselves that they waited, and will consume more in response.

It might be ill advised, however, to even attempt to replicate the experience with a call centre queue, where the people joining the queue will most likely be angry and/or upset at the time of joining. By the time they speak to a human being, the most likely result of their lengthy wait will be a loss of temper and a bout of angry shouting, rather than an outbreak of high fives and laughter.

Few restaurants might be able to match the Disney organisation in delivering that quality of enjoyment, but those who make the slightest effort and offer quick delivery of a drink or two to those waiting for a table, or offer a free basket of bread and chilli oil to those sitting at a table waiting to have their order taken and prepared, will deliver a degree of satisfaction that goes beyond the financial cost. This can transform waiting from a chore that must be endured into an enjoyable part of the overall experience.

A working knowledge of Einstein's theory of relativity might come in useful here, enabling an informed opinion on the differences between experienced time in the queue and actual lapsed time.

### The propensity to queue

Sticking with restaurants, and the propensity to queue, anecdotal evidence points to the existence of what we all probably think of as "empty restaurant syndrome". This inclines us to look for a restaurant with customers already at table, as we instinctively follow our herd mentality.

However, a diner who knows about the quality of a restaurant will probably not mind entering it when it is empty. A diner who does not know about the quality, might use the queue as a signal of quality. In other words, a diner might assume that there are "informed" customers in the queue who are waiting because the restaurant offers good quality.

Even if a proposed alternative restaurant is full, if one or two members of a group have eaten there previously, they are in a position to recommend to their companions that it is "worth the wait" – especially if they can have a drink or a nibble or two while waiting.

This opens up a whole new area for discussion, on whether queuing customers should be encouraged to pre-order to reduce the eventual time spent at table. This could, however, ease the kitchen staff to capacity as it leads to even higher peaks in kitchen workload, as the demand for kitchen output is no longer capped by the number of seats.

Diners-in-waiting might not even realise that watching the serving of tasty dishes while waiting for a table can function as an appetiser, and wallet opener, triggering the ordering of and paying for more food than planned when eventually seated.

Restaurateurs must beware, though, that we all have different trigger points. Some people might wait an hour or two at a favourite restaurant, reassuring themselves that it will be "worth the wait". Some might leave within five minutes, even at a favourite restaurant, if they sense that something is amiss with service. Some might go and find a different restaurant altogether.

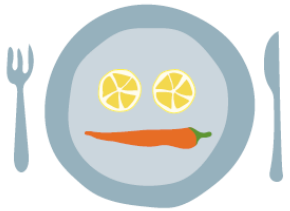
*"By the time they speak to a human being, the most likely result of their lengthy wait will be a loss of temper and a bout of angry shouting."*

### The evolution of dining

It could be argued that the evolution of dining for the masses from the simple consumption of necessary fuel is one of the defining characteristics of the modern era.

Dining as a leisure activity has long been a staple of life for the wealthy. Dinner for the rich has seldom, if ever, been simply a starving point for the evening, but the evening itself.

As such self-indulgent behaviour has trickled down the socio-economic ladder, so it has become more important not only to serve palatable food, but also to make diners feel more comfortable (but not too comfortable, as rapid turnover of tables is a key element of the business model in the fast-food and casual dining restaurant segments).



*"Restaurateurs must beware, though, that we all have different trigger points."*

In today's competitive environment, a restaurant might get away with serving poor food but not with providing a poor experience.

### Research and data

Returning from the digression and the anecdotal, and looking to the lessons learnt from traditional studies, research undertaken in 1992 and replicated in 2008 demonstrated the impact that background noise can have on consumer behaviour. Raising the volume of music by a few decibels, for instance, encourages men to buy more beer; possibly it is then much easier to drink than to hold a conversation.

The issue of data is a key detail in the successful telling of this queuing story. While call centres routinely collect masses of data in the course of their daily routine, there have until now been few data-based studies of the restaurant sector.

The general view is that people come, walk or don't walk, and go. In our study, based on a targeted restaurant in Bangalore in India, we used a special app, a sophisticated digital restaurant reservation and table-management platform, which required customers to log in in order to join its queue, and tracked exactly when customers were assigned to a table, and when they left the restaurant. ▸

# Assortment planning

Erasmus Centre for Data Analytics

- Optimizing Retail Assortments – Methodology for optimizing the composition of store-level category assortments.
- Robust optimization of the 0–1 knapsack problem: Balancing risk and return in assortment optimization – Methodology to optimize store-level assortments that balances expected return and risk inspired by portfolio optimization
- Incorporating Consumer Product Categorizations into Shelf Layout Design – Methodology to optimize category-level shelf layouts based on consumer product categorizations

# Inventory Management

Erasmus Centre for Data Analytics

- Multiperiod Inventory Management with Budget Cycles: Rational and Behavioral Decision-Making – Analysis of how the framing decision environment affects inventory decisions

# Warehousing

Erasmus Centre for Data Analytics

- Capacity Analysis of Sequential Zone Picking Systems - Developing a capacity model for sequential zone picking systems.
- Estimating performance in a Robotic Mobile Fulfillment System – Modeling robotic mobile fulfillment systems and analyzes their performance.
- Modeling, Analysis, and Design Insights for Shuttle-Based Compact Storage Systems – Effect of alternate technologies on order throughput time performance
- Human-Robot Collaboration in Warehouse Order Picking – Comparing the objective outcomes of productivity and accuracy in two collaborative setups with the human leading the robot versus the human supporting the robot (under review)

# Truck transportation

Erasmus Centre for Data Analytics

- Determinants of safe and productive truck driving: Empirical evidence from long-haul cargo transport – Empirically identifying the determinants of safety and productivity in long-haul truck transportation
- In the Driver's Seat: The Role of Transformational Leadership in Safe and Productive Truck Cargo Transport – Investigating the effect of safety-specific transformational leadership (SSTL) on the performance outcomes of safe driving and driving productivity in both long and short-haul truck cargo transport (under review)

# Truck transportation

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50 YEARS RSM Erasmus | Rotterdam School of Management Erasmus University

RSM Discovery

Home › Discovery: Research impact › Articles › A drive for safe and productive trucking in India

## About the researchers

**René de Koster**
*Professor of Logistics and Operations Management*
*See profile*

**Jelle de Vries**
*Assistant Professor*
*See profile*

**Debjit Roy**
*Associate Professor of Logistics and Operations Management*
*See profile*

**Alexandros-Myron Pasparakis**
*PhD Candidate*
*See profile*

## Stay Informed

# A drive for safe and productive trucking in India

Thursday, 7 November 2019

One of the highest rates of fatal road accidents is in India, where more than 231,000 people lose their lives on the roads very year. This terrible statistic gets worse: approximately 65 per cent of fatal crashes in India are caused by trucks. Besides the obvious direct consequences – the lives lost, the injuries sustained, the liabilities incurred – there's also a negative effect on the productivity of the trucking company. But research led by Dr Debjit Roy, of Rotterdam School of Management, Erasmus University (RSM) and Indian Institute of Management Ahmedabad (IIMA) has uncovered how truck drivers – and truck fleet managers – can reduce this terrible toll on lives and on business.

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# Ongoing Research Projects

# Omnichannel retail

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- Managing the Marketing-Operations Interface in Omnichannel Retail – A special issue on operational challenges on the marketing-operations interface in omnichannel retail settings.
- The effect of store openings on demand – Empirical investigation on how store openings in an omnichannel setting affect both primary (category-level) and secondary demand (market shares within category) per channel

# Online retail/last-mile logistics

Erasmus Centre for Data Analytics

- Going green in attended home delivery: the impact of green labels on time slot choice and operational sustainability - Research on the impact of nudging customer choice behavior in attended home delivery
- Simultaneous customer interaction in online booking systems for attended home delivery - On modelling the complex trade-offs between waiting times and service levels in online booking systems for attended home delivery

# Inventory Management

Erasmus Centre for Data Analytics

- Decision Biases of Empirical Newsvendor Decisions: Target Service Levels are Achieved Effectively, but Inefficiently – An empirical analysis of inventory decisions of bakery products at a large German retail chain. The article identifies different decision biases of managers how these affect company's performance.
- Which decision support do empirical newsvendors need? How to use local knowledge best – In a field test we analyze how different decision support tools affect inventory decisions and performance of store managers. This article discusses how manger's local market knowledge can be used effectively.

# Retail Analytics

Erasmus Centre for Data Analytics

- Retail Analytics – ongoing study that surveys the academic literature on retail analytics and takes stock of the most recent developments in terms of technology, data, and analytics in practice.

*First results to be presented at the next EURO Working Group on Retail Operations meeting on November 27, 2020*

# Restaurant Analytics

Erasmus Centre for Data Analytics

- Restaurant analytics – ongoing study on the current applications and vast future potential of analytics applications in all decision domains related to restaurants, ranging from strategic issues (e.g. managing the food supply chain) to operational decisions (e.g. queue management and table allocation).

# Warehousing

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- Safety and productivity in reach-truck operations: a VR experiment – using Virtual Reality to identify the safety-productivity tradeoff in reach-truck driving, and the moderating role of feedback and individual characteristics in this context.
- Human-robot collaboration: optimizing the worker allocation in robotized warehouses to maximize system performance
- Flexible layouts using IoT: using data obtained from IoT sensors about worker movement to identify long travel times and optimize facility layouts

Source image: https://roboticsandautomationnews.com/2020/01/31/how-robotics-can-be-extremely-beneficial-to-warehouse-business/29344/

# Competitive Intelligence

- Optimal location for competing retail service facilities – Analytical approach to solve the location problem for retail service facilities, consumer-facing storefronts, specifically restaurants, that provide a service and compete with other retailers.
- Pricing under limited competitor data – ongoing study to present a new econometric method for demand estimation based on—widely available—competitor intelligence data, addressing two important and difficult gaps in this stream of research: (1) model estimation with competitor effects (2) model estimation when the firm sells a single product. We use the constructed estimation model to decide on how to set the daily prices for a hotel.

# Truck transportation

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- Cut the Scrap? Operational Consequences of an Aging Truck Fleet – Using archival data, we test the relationship between truck age and driver retention, productivity, and unsafe driving behavior.

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# Education in Retail and/or Analytics

# MScBA Business Analytics & Management

Erasmus Centre for Data Analytics

- Our team is heavily involved in RSM's new flagship master programme on analytics
- Robert Rooderkerk serves as academic director
- Müge Tekin coordinates the Supply Chain Analytics elective
- Multiple team members are involved in thesis supervision

RSM Erasmus | Rotterdam School of Management Erasmus University

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## MScBA Business Analytics & Management

Even 'traditional' sectors of business have become data-rich – and such businesses need people who can find the business benefits in digital applications and technologies. Think of supermarkets with their abundance of data, or logistics and its dependence on routing and timing information.

This specialisation in our one-year (12 month) full-time MScBA study programme teaches you to understand, solve and communicate operational, tactical and strategic challenges from data in organisations. What these challenges have in common is their complexity. They need advanced analytics – but the results can be extremely valuable for business. You will find the causal relationships when you tackle real-life business problems in the business world.

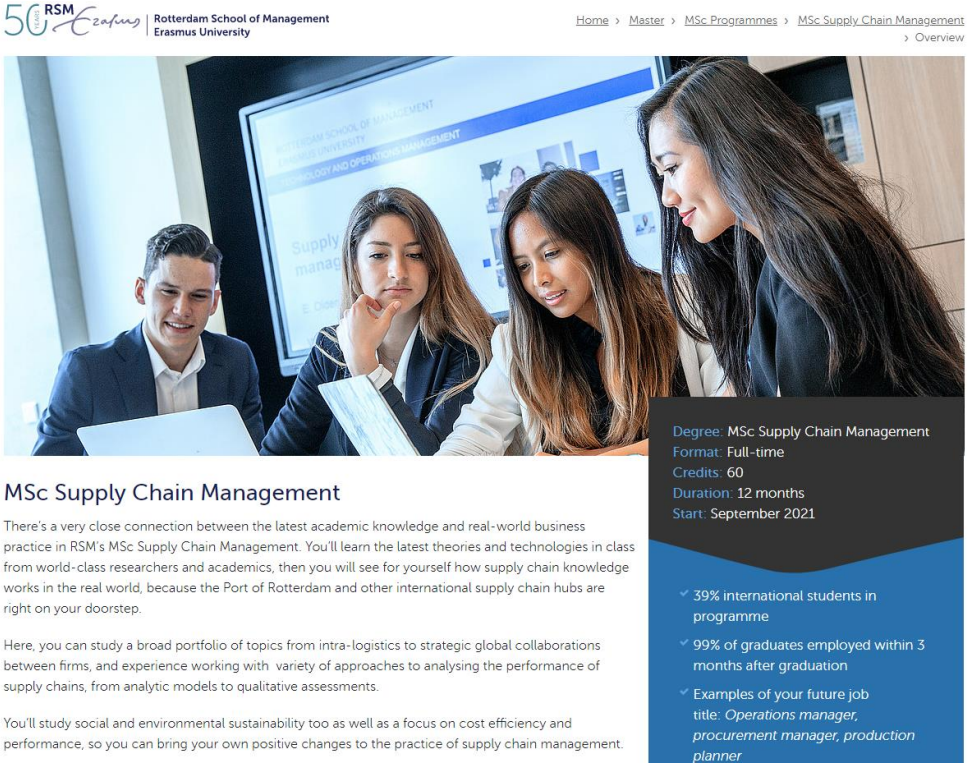
After completing your core courses, you can choose from electives such as Analysing Digital Footprints, Supply Chain Analytics or Fintech: Business Models and Applications, before writing your thesis.

Degree: MScBA, Specialisation Business Analytics & Management
Format: Full-time
Credits: 60
Duration: 12 months
Start: September 2021

- 43% international MSc students at RSM
- 86% of MSc graduates employed within 3 months after graduation
- Examples of your future job title: *Marketing analyst, Data analyst, Financial analyst, Supply chain analyst*

# MSc Supply Chain Management

- Niels Agatz serves as the academic director and co-teaches a course on distribution networks
- Rene de Koster teaches a course on facility logistics management
- Debjit Roy teaches a course on service systems
- Several theses each year dealing with challenges in the retail value chain



# ECDA x ETC Summer School

- Robert Rooderkerk has coordinated the 2019 ECDA x Erasmus Tech Community Summer School on Data Analytics

# ECDA x ETC Summer School



# Other relevant courses

Erasmus Centre for Data Analytics

- René de Koster and Robert Rooderkerk will develop a new elective course called “Retail Operations” for the bachelor programmes at RSM
- Robert Rooderkerk will develop a Digital Marketing and Operations post-experience course together with Fabian Sting (Cologne) as post-experience course
- Müge Tekin will develop a new elective course called “Supply Chain Analytics” for the Business Analytics & Management Masters programme at RSM

Erasmus Centre for Data Analytics

# Passion provides purpose, but data drives decisions

**Dr. Robert P. Rooderkerk**

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www.eur.nl/data

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