Case Study

BEAM Academy Leads Data Transformation in the Retail Sector

M&S

Results

Significant commercial benefit
achieved through pricing modelling and optimisation

Significant commercial logistics savings
achieved through replenishment optimisation

Marketing cost savings
driven by improvements in predictive models for customer recapture

Cutting survey delivery time by 60%
by driving efficiency through the introduction of NLP

Marks & Spencer

Marks and Spencer (M&S) are a retailer delivering top quality food, clothing, and home products to over 32 million customers. They launched the BEAM Academy in 2020 with the aim of giving their colleagues the ability and confidence to work with and fully exploit data to better serve their customers.

Client profile

Organisation: Marks & Spencer

Industry: Retail

Organisation Size: 80,00+ employees

Headquarters: London, UK

Founded: 1884

"I've seen the direct impact our data initiatives have had across various functions of our business. Our colleagues have been able to show a fast return on investment in these apprenticeships and extract more value from our data. The Level 7 AI apprenticeship with Cambridge Spark is helping us achieve our overall strategic objectives."

Russell Johnson, Chief Data Scientist at M&S

Elevating the data skills journey

In 2020, M&S launched its BEAM Academy to accelerate growth of colleagues' digital and data skills and embed digital-first ways of working. Helping to continue making M&S a great place to work, BEAM Academy gives employees access to many programmes, including industry-leading data apprenticeships, live learning events and workshops, hackathons, and more.

To date, 350+ colleagues have benefited from the level 3 and level 4 data apprenticeships. But in November 2021, M&S launched retail's first Level 7 AI & Data Science apprenticeship in partnership with Cambridge Spark. This enabled M&S to offer colleagues more advanced upskilling in data in line with their ambition to grow industry-leading data science and analytics capability.

M&S now have 4 cohorts and are the largest provider of the programme in the retail sector with fellows from the first cohort having graduated in October 2023.

Suzanne Howse, Head of Enterprise Data at M&S, says key to their decision to partner with Cambridge Spark to deliver a Level 7 AI & Data Science programme was the fact that the apprenticeship provider's CEO Raoul-Gabriel Urma intimately knows what it's like to "live and breathe as a data practitioner". It was also clear the company's sole focus is on educating workforces with critical digital transformation skills to succeed in the AI era.

The programme has seen value added through colleagues participating from across business areas, including Clothing & Home, Finance, Supply Chain, HR, Digital and Tech, to name a few.

Next, we dive into the business and personal impacts of three such learners: Martyna, Daniel & Louise.

> "Our three main focuses as a data team are core data technology, extracting value from data, and BEAM Academy, which powers enablement, adoption and upskilling for data."
>
> **Suzanne Howse, Head of Enterprise Data at M&S**

Profit growth through pricing optimisation

One of the first M&S graduates, or "fellows", on the Level 7 programme was Martyna Jones, then an End-to-End Flow Transformation Manager in the Supply Chain and Logistics Department.

Martyna mainly works with enterprise data, including stock movement, stock holding, sales and other data, to optimise how M&S runs its logistics network.

Having completed a Level 4 Data Analyst apprenticeship in July 2021, she saw the opportunity with the Level 7 programme to progress in her career and see whether data science was truly the right career path for her.

Apart from advancing her career, Martyna also saw the potential of the programme to help her deploy new data science techniques across a wider range of use cases within the business. And she says she was able to do this from Day 1 on the programme when she helped build a pricing engine that would contribute significantly in commercial benefit for M&S.

The machine learning model uses historical pricing and sales data to decide the optimal sales price for individual products. As a result, M&S is able to balance sell-through numbers with pricing through the duration of a sale, maximising profitability.

Cost savings through replenishment optimisation

Replenishment optimisation, another key product Martyna has delivered within the last year, also has high commercial impact.

Traditionally, M&S would replenish a unit of a product right as a customer bought it. This method is good for just-in-time replenishment, but from a logistics perspective, this makes picking in the warehouse inefficient.

In response, Martyna introduced an optimisation model that adjusts when products are replenished. This allows pickers to pick more units less often, driving logistical efficiencies without compromising customers' ability to purchase.

Celebrating other successes

Looking ahead, Martyna says she's currently working on two other data science projects: one aims to drive profitability by balancing the cost of delivery frequency with that of holding more or less stock. The other will use machine learning to improve the accuracy of long-term forecasting for purchasing, helping M&S better understand future sell-through to make more informed purchasing decisions.

Apart from the impressive business outcomes she achieved during her apprenticeship, Martyna was promoted twice within one year of starting the programme.

She even won the BCS IT & Digital Apprenticeship Award for Artificial Intelligence Apprentice of the Year and was shortlisted for the Cambridge Spark Data Awards in 2023.

Machine learning for customer recapture

Daniel Twells is Data Science and Insights Manager within the Property Department at M&S and a fellow on the Level 7 programme.

Daniel discovered the apprenticeship through an internal session at M&S.

He hoped the programme would help him deliver better business outcomes, as well as give him a deeper and more comprehensive understanding of the data science domain space.

Since enrolling in the programme in September 2021, he's applied his new data skills to build machine learning models that estimate customer recapture and support the new stores openings programme as part of M&S' ambition to accelerate its store rotation programme.

> "I think the quality of interactions I have with some non-technical stakeholders has improved, and I can understand much more intuitively now what might be happening from a data or modelling perspective enabling me to focus on articulating that back to colleagues."
>
> **Daniel Twells, Data Science and Insights Manager at M&S**

He and his team saved time by automating much of the modelling that once required more manual intervention. They've also saved excess marketing cost by helping inform the propensity for recapture at the customer level, informing improved targeting for campaigns.

Daniel says the programme has also been an effective recruitment tool, attracting new talent to his team.

Applying NLP in people analytics

Louise Baird is Lead People Analytics Manager at M&S in the people function and started the Level 7 programme after having completed the Level 4 Data Analyst programme. She was motivated by a desire to take her data skills to the next level and says that, having done an apprenticeship through the BEAM Academy before, she knew how beneficial they can be.

Since joining the Level 7 programme, she's been working on a model to identify retention-risk staff and identify opportunities to make M&S an even better place to work and deliver a high-performance culture.

She's also shared her learnings on the programme with the team, implementing natural language processing (NLP) to process a routine employee engagement survey. The survey is sent to ~60,000 M&S employees, and responses previously needed to be manually read for processing. Using her learnings about NLP on the programme, Louise successfully cut the delivery time for analysis by 60%.

Closing thoughts: How BEAM Academy fuels M&S's industry leadership

The BEAM Academy has been instrumental not only in driving business outcomes but also in fostering a culture of continuous learning and growth within M&S.

Its partnership with Cambridge Spark on the Level 7 AI & Data Science apprenticeship has led to major advancements in commerciality, efficiency and cost savings across varied business units.

Equally important, by promoting a culture of upskilling and digital literacy, the Academy has helped ensure M&S remains one of retail's most desirable workplaces. As the Academy continues to guide M&S's journey towards a data-driven future, its role in positioning M&S as an industry leader in digital-first strategies becomes increasingly clear.