MIS QUARTERLY EXECUTIVE

"(Gen)AI First" at OTTO, Germany's Largest Online Store

Artificial intelligence (AI)—and, since the end of 2022, generative AI (GenAI)—have become a key competitive factor for online retailers. In an interview with Walter and Barbara Brenner of the Institute for Information Systems and Digital Business at the University of St. Gallen, Switzerland, Michael Müller-Wünsch, chief information officer at OTTO, Germany's largest online store, explains how OTTO uses AI to increase its competitiveness by following the mantra "(Gen)AI First."[1]

Michael Müller-Wünsch
OTTO (Germany)

Walter Brenner
University of St. Gallen (Switzerland)

Barbara Brenner
University of St. Gallen (Switzerland)

About OTTO

OTTO, headquartered in Hamburg, Germany, is part of the Otto Group, an international consortium, operating in the retail, e-commerce, financing and logistics space. Its 36,300 employees work worldwide across more than 123 subsidiaries—including Quelle, Hanseatic Bank and Crate & Barrel—while generating €14.9 billion in sales in the company's 2024-25 fiscal year.

The subsidiary OTTO is focused on mail orders in Germany, a business that was started as "Otto Versandhandel." OTTO printed its first mail-order catalog in 1951. OTTO has since embraced multiple digital transformations. For example, it published its mail order catalog online for the first time in 1997 and subsequently became one of Germany's leaders in online shopping.[2]

Today, OTTO employs around 5,300 people across Germany, with a product assortment of more than 18 million stock keeping units—from clothing to kitchenware to electrical appliances—tied to more than 34,000 brands and 6,200 partners/suppliers. In 2024-25, OTTO had revenues of €7 billion and a 12.2 million active customer base. At peak times, OTTO receives up to 35 orders per second; today, every third washing machine ordered online in Germany comes from OTTO.

1 Iris Junglas is the senior accepting editor for this article.
2 In the 2022-23 fiscal year, OTTO's e-commerce sales totaled about €4.2 billion, making OTTO the second largest e-commerce platform in Germany, after Amazon.

Interview with Michael Müller-Wünsch

Walter Brenner (WB): You completed your doctorate at the end of the 1980s with a dissertation on artificial intelligence, long before artificial intelligence was on everyone's lips. Were you surprised by the recent emergence of ChatGPT and the rapid spread and attention that generative artificial intelligence has attracted?

Michael Müller-Wünsch (MüWü): The speed with which generative AI, especially ChatGPT, has become part of many people's everyday lives has been fascinating. Even though we have been working with AI at OTTO for over ten years and AI is firmly anchored in our culture, the developments surrounding generative AI have unleashed a new dynamic. Suddenly, AI became tangible for many people, not just experts. That was exciting and triggered an innovation boost. We used this spirit of optimism to create an internal GenAI solution with "ogGPT," which is based on an existing large language model but runs within our own infrastructure. This enabled our employees to use GenAI securely and in compliance with our data-protection regulations. For many, this was the start of a new way of working.

Barbara Brenner (BB): How did you initiate artificial intelligence within OTTO?

MüWü: Two of the first "entry topics" ten years back were: the development of a product recommendation tool on "otto.de" and a dynamic product-pricing tool using machine learning. For both cases, we initially sourced solutions from third-party providers, which made it easier to get started.

We were already very data savvy with regard to complex analytics. As a mail-order company, we learned early on how to work with large amounts of customer data and their orders—for example, how to maximize the efficiency of our advertising campaigns.

However, people must not be forgotten when introducing new technology and the associated change in work processes. From the start, we involved our employees and formed cross-functional teams.

WB: Do you have your own "AI strategy" today? Is the use of artificial intelligence anchored in your company's IT strategy and business strategy?

MüWü: We have had an explicit AI strategy for several years that started even before the big GenAI hype took place. Our AI strategy is updated annually and, of course, aligns with our IT strategy and interacts closely with our company's overall strategy, which is often shaped by AI—for example, some key business projects are only possible through the use of AI. We devote a lot of energy to realizing AI potential in our key business projects.

Last year, we created the role of a chief AI officer. This position is led by a seasoned AI expert who has been driving data science and machine learning at OTTO for years. One of their central tasks is to develop and systematically pursue a comprehensive AI strategy.

BB: Can you give some examples of AI use cases at OTTO?

MüWü: We have more than 100 AI experts working on approximately 65 AI applications. We use artificial intelligence in many business processes, ranging from warehousing to customer experiences. I predict that by 2030, close to 50% of OTTO's technology landscape will have AI architectural elements in it.

Here are examples of how we use AI today:

1. *AI-based forecasts for sales and returns:* We use AI-supported sales forecasts to predict which items will arrive in the warehouse and when, what sales can be expected at what time and how many items will be returned. We use this information, for example, to determine procurement quantities in purchasing and to optimize warehouse logistics. Sales personnel use these findings to plan their campaigns and to come up with the right offer in times of high demand. Each month our AI tool produces 7.5 billion individual forecasts.
2. *AI-based image recognition for content compliance:* Curating and constantly reviewing the growing range of products on our platform with regard to corporate values and compliance guidelines is essential. We use image recognition to keep undesirable items off our platform. For instance, the AI filters out prohibited symbols or nudity and helps us to remove this content immediately. We similarly

use AI to evaluate product texts in order to identify and remove inappropriate content.

3. *GenAI content creation:* Every item/product/article needs an informative product text to help customers make a purchase decision. GenAI allows our content teams to automatically create product descriptions and provide customers with consistent information across the product range.
4. *Intelligent search and personalization:* A customer's shopping experience often begins with a specific search query. The semantic search engine on both, otto.de and in the OTTO app, "understands" what a customer wants. It recognizes the meaning behind a search term; it can identify synonyms and spelling mistakes as well. The search tool learns from customers' behavior. For example, if a customer enters "jogging shoes," the intelligent search engine is able to cross-reference it with people who have searched for something similar, like "running shoes" or "sports shoes," and displays those. As a result, our click rates on similar articles have increased by up to 50%. Also, as customers spend time on our platform, our AI tools "learn" about their preferences and enhance the user experience with tailored product suggestions.
5. *Intelligent shopping assistant and customer service chatbot:* OTTO first tested the use of an AI shopping assistant on 180,000 products in the summer of 2023. Customers entered product-specific questions into a chat bar on our website or app and, nearly instantly, received an answer based on existing product reviews, product descriptions and product titles. Also, for several years now, OTTO's chatbot "Clara" has been answering simple and recurring customer queries, thus relieving our call center agents. Currently, software developers are working to improve the chatbot to enable more human-like dialogue.
6. *Insights into customer reviews:* An AI algorithm automatically recognizes the most frequently mentioned aspects in customer reviews, identifies the tonality/sentiment and classifies the statements. Customers can filter reviews using specific keywords and view specific criteria—such as whether an item of clothing runs large or small, or whether a TV set demonstrates good screen quality and usability.
7. *Internal GenAI:* The Otto Group's own generative AI tool supports our employees in their everyday work: "ogGPT" is the Otto Group's internal ChatGPT and it is available to all employees. ogGPT is based on the OpenAI model and responds to text-based prompts for text and image creation. ogGPT has connectors to the Otto Group's apps too. Employees can ask ogGPT questions and receive answers, based on a secure database. ogGPT is not only powered by a large language model but can use different models too. This ensures that we keep pace with many innovative developments in generative artificial intelligence. The AI processes over 3,000 queries every day and generates up to 1,700 images.
8. *Software development:* By using GenAI-based tools, our software development teams were able to achieve massive efficiency gains with regard to programming. They were able to launch minimum viable products more quickly and test new solutions in the field immediately. This offers enormous added value as part of the ongoing development of our platform.

WB: Where is GenAI going at OTTO?

MüWü: The use of GenAI in content production could continue to grow prospectively. We are already experimenting with several application areas. For instance, fast image generation means that A-B tests can be carried out easily with different product images without having to produce them at great expense. This would allow teams to quickly test whether a sofa, say, is more likely to sell if it is shown with a loft or a one-bedroom apartment backdrop. For platform providers, these are simple ways to increase conversion rates. Customer experience could be further personalized, for example, by allowing customers to choose the setting in which

the item is presented or by tailoring the displayed image and text content, based on customers' data, user behavior and native language.

BB: How is AI work organized at OTTO?

MüWü: Continuous investment in AI necessitates keeping pace with the dynamic nature of the technology's development. Applications with AI elements follow a different logic than traditional IT projects. They need to be continuously developed, and this must be reflected in our budget and organization.

We pursue the "hub-and-spoke" approach to organize AI. We have a large central AI hub, where overarching AI products are developed and provided. The AI hub is directly connected and organizationally interlinked with various decentralized AI teams that are integrated into the spokes (business units). The spoke teams develop and operate business process-specific AI solutions. By following the hub-and-spoke approach, we leverage the advantages of both a centralized and decentralized organization. This organizational structure suits us as a large company with a high level of AI maturity.

WB: How do business unit functions at OTTO deal with artificial intelligence?

MüWü: AI is no longer limited to the IT department. Instead, AI now takes place at the heart of our business units. Our task is to facilitate the appropriate conditions: providing a secure infrastructure (such as our internal GenAI solution "ogGPT"), providing clear governance guidelines and a data protection-compliant framework for the use of generative AI. At the same time, we support business units in their technological and methodological development—such as by offering prompt training and standardized tools for developing custom GenAI applications. Along the way, we have experienced a powerful cultural change at OTTO: AI is no longer built "for" specialist departments, but rather "with" them and, increasingly, by them.

Over 80 colleagues from different departments are also involved in our company-wide GenAI ambassador program, building expertise, sharing best practices and actively channeling business needs into the development group. The aim is to create a level playing field: Every employee—regardless of prior knowledge or role—should have the opportunity to use AI effectively and develop new solutions. The most innovative ideas arise where professional expertise and technological possibilities meet.

BB: What skills did you personally need to develop at OTTO to use AI professionally?

MüWü: A few years ago, we began systematically training our employees in AI. We conducted several mandatory AI training courses and workshops with all managers.

With GenAI, the topic of training the wider workforce has taken on a new significance. To boost the potential of individual productivity, mere tool training is insufficient; with the help of our GenAI ambassador program, we employ a train-the-trainer approach to significantly accelerate the innovation curve.

Our chief AI officer has been joined by our new chief tech transformation officer, who drives the GenAI transformation with great energy. The "Pushing AI" team, which bundles the many strategic AI measures into a program for the systematic promotion of AI, is built around the leadership of these two colleagues. We also use this program to coordinate our strategic partnerships with other companies and universities.

WB: What challenges arose from using AI? Was there resistance during its introduction?

MüWü: At OTTO, we have often reinvented ourselves. This culture of being open to new and important developments is thus second nature at OTTO. This helps us as we face the ever-increasing penetration of AI and try to align ourselves accordingly. Our top management and, above all, our owner, Dr. Michael Otto, demanded very early on that all group companies be not only open to emerging AI-based services, but also push for them. Today, there is an explicit "(Gen)AI-First" credo in the company. This call to lead with AI is clearly having an effect and helps us in every process that is being reshaped by AI.

WB: Can you go into detail about the importance of AI for your company today and in the future?

MüWü: The number of value-creating AI products in our core processes is very high because we recognized the potential of AI for our business very early on. We would no longer be competitive without AI.

This development will continue. The impact that GenAI will increasingly have on all our lives can hardly be overestimated. At OTTO, processes

still exist that are not yet explicitly supported by AI. But that will soon change. We will eventually see complete penetration by AI. And all parties—our customers, partners and our company—will benefit greatly. I am very much looking forward to this development and to shepherding it in my role.

BB: What about the business impact of AI? Can you reveal productivity or cost-saving numbers?

MüWü: I am constantly asked whether we can demonstrate concrete productivity gains or cost reductions. It is still too early. Our goal is to familiarize employees with the use of ogGPT and motivate them to consistently use AI in their work. When we first started using ogGPT, employees used the tool at least once a week. Today, we expect them to use the tool naturally in their everyday work.

BB: Do you see the impact of AI more in increased revenues, cost reductions or improved interactions with customers?

MüWü: We have AI use cases in all of these areas. Thanks to various AI innovations, revenue in the Advertising Services Division increased significantly and beyond expectations last year. Using AI, and GenAI in particular, we are scaling processes without having to scale our workforce to the same extent. Interaction with our customers, for example, is addressed by an AI for semantic search on otto.de. We are also working on GenAI-based support for customer and partner communication using several AI bots, which we are developing to meet our high standards of trustworthiness and accountability.

WB: What recommendations would you give to companies or chief information officers who want to put their money on AI?

MüWü: It won't work without significant investment. I recommend a systematic and strategic approach that ultimately aims to bring AI into the business units. I am convinced that there will be few business models that will not benefit from AI. In most companies, it will be essential for survival!

About the Author

Michael Müller-Wünsch

Dr. Michael Müller-Wünsch is CIO at OTTO, where he is responsible for IT and logistics. He studied computer science and business administration at the Technical University of Berlin and later completed his Ph.D. in the field of artificial intelligence. After holding various management positions in the IT world, he joined OTTO in 2015 as head of technology, where he has since played a pivotal role in shaping the company's business and IT transformation, as well as leading the company's 1,000-strong tech team. He also volunteers as a board, executive committee and advisory board member in various tech initiatives, including expanding opportunities for women in tech.

Walter Brenner

Walter Brenner is a retired professor of information management at the Institute of Information Systems and Digital Business of the University of St. Gallen. Before joining the University of St. Gallen, he was the chief information officer of a chemical and pharmaceutical company in Switzerland and a professor of information management at three universities in Germany. He has published several hundred articles and more than 30 books.

Barbara Brenner

Barbara Brenner is a researcher at the Institute of Information Systems and Digital Business of the University of St. Gallen. She is currently collaborating on a book about the future of IT operating models and is also involved in various research projects. In 2017, she completed her master's degree in corporate innovation management at the University of Applied Sciences in St. Gallen. Earlier in her career, she worked as an entrepreneur.