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Generative AI and AI-Based Business Model Innovation

A conversation with Oliver Gassmann and Naomi Haefner – interviewed by Christian Nielsen

Oliver Gassmann (OG) and Christian Nielsen (CN) convened at the Business Model Conference in Bologna, where he gave the opening keynote on business model innovation. His emphasis has been on digital technologies and generative AI as game changers for companies – and their business models. We completed the interview with Oliver and Naomi online after the conference. They work together at the University of St. Gallen on several research projects on AI-based business models and how AI will influence business model innovation in future years.

CN: Can you explain generative AI and why it is essential?

OG: Certainly. Generative AI is a branch of artificial intelligence that uses neural networks to create new content like images, text, video, and music based on patterns it learns from large amounts of data. It is significant because it replaces routines, automates creativity, and has diverse applications across all fields of the value chain. Forecasts on the productivity gains through AI go into trillions of dollars during

the next decade. According to the McKinsey forecast, by 2030.

CN: How do you see generative AI evolving in the near future?

OG: The future of generative AI looks promising. We will see improvements in the quality and variety of content it produces due to better neural networks. It will work more alongside humans, enhancing creativity rather than replacing it. In our paper from 2021 (Haefner et al., 2021), we addressed the role of AI in innovation processes. However, Chat GPT's rise in 2022 exceeded all forecasts regarding its impact. Interesting is the speed of the progress. In 2012, modern AI arose with the breakthrough of the Alex Net (cf. Alom et al., 2018), a convolutional neural network for visual pattern recognition. It started the area of discriminative AI, for example, distinguishing cats from dogs, traffic signs from billboards, etc. Since the Open AI initiative, Chat GPT had its breakthrough, the role of Generative AI has started to make a difference. It is close to impossible to

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forecast its development. Every day, new applications are posted. Indeed, we can say that ethical concerns and responsible development will become more critical.

NH: I agree that many developments to improve implementation and the responsible use of generative AI are heading our way. It will be interesting to see the kinds of applications that can be built once the models successfully cover more modalities—currently, they do text and images well—and as they are expanded to be able to take more data like web search into consideration. Of course, there may be more surprises, like the original unveiling of ChatGPT in November 2022. The capabilities of that model surprised even the researchers working on it, so I am hoping more of that is to come. Aside from improved systems, I think we will also see the proliferation of open-source generative AI models, which could potentially lead to many more companies being able to use this exciting technology.

CN: How does generative AI impact business models?

OG: Generative AI is set to reshape business models in various ways. In creative industries, it speeds up content creation for artists and designers. In e-commerce, it personalises product suggestions and even designs custom items. Businesses can also use AI-generated content for marketing, saving time and resources while staying innovative. To every SME manager, I suggest experimenting with ChatGPT to think about enhancing communication with customers on digital channels, improving customer retention, developing tender offers, and managing customer complaints. Getting a first experience and starting with the learning journey is essential.

NH: There are many opportunities for companies to use generative AI in ways that lead to efficiency gains or cost reductions. These can work within existing business models or enable potent adjustments. The exciting impact of generative AI will come from companies that can devise creative new applications, bringing to light various possibilities for innovating existing business models and creating entirely new ones.

OG: There are a lot of critical statements regarding Generative AI, primarily the phenomenon of “hallucinations”. These are wrong sentences, but they sound reasonable. However, do not forget that the quality of the Gen AI output will increase very fast. We are used to discussing exponential development when we have Moore’s law in mind. However, today’s development of Gen AI has a radically faster speed than anticipated. Generally, we tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run.

CN: Can you provide examples of businesses using Generative AI effectively?

NH: Many companies are experimenting with Generative AI in various areas across the value chain. One of the most well-known examples is coding, where many programmers have adopted GitHub’s Copilot to speed up and improve their programming efficiency. There are also now open-source implementations, such as StarCoder by BigCode, which any business can use.

OG: Brands like H&M and Adidas use Generative AI to design clothing patterns efficiently. Adobe uses Gen AI to generate safe images for commercial use; they are trained on millions of professional grades, licensed, high-resolution images and ensure that the created content does not violate existing intellectual property. Video game developers use AI to create expansive virtual worlds effortlessly. For example, the Korean NC Soft uses Gen AI to create dialogue and movements based on text and sound given to it. Huge efficiency improvements are predicted around marketing and customer support. Most known are Amazon and Meta, which have begun to integrate their generative AI into their product advertising. This will further accelerate the famous flywheel of platform business models.

CN: What challenges might businesses face in adopting AI, and how can they address them?

OG: Implementing AI can be resource-intensive for smaller businesses due to the need for data and computing power. There is also the risk of AI-generated content being mistaken for human-made,

raising authenticity concerns. Ethical issues, like bias in content, recruitment, and potential job displacement, need careful handling.

NH: Absolutely; firms need to be ready with a suitable technical basis and employees who understand the technology and can ensure it is well-implemented. Running models in production requires managing data, keeping track of models, updating them, monitoring them for bias and drift, etc. Beyond these technical and organisational aspects, it is also crucial that the company instils a data-driven culture (Haefner et al., forthcoming). This is closely linked to the next issue...

OG: ...balancing automation with human creativity. Overall, the dominant mindset remains the most significant barrier to implementing AI on a larger scale. Our research on the pharmaceutical industry has shown that despite the vast productivity gaps in pharma innovation and the demonstrated potential of AI, pharma has challenges in adopting digital technologies (Schuhmacher et al., 2020; 2023). AI-based companies like Insilico Medicine use the technology effectively in the drug discovery process.

CN: Can you highlight directions in generative AI?

OG: Researchers strive to make AI more creative, producing novel content, not just mimicking what is already there. Integrating generative AI with technologies like augmented reality opens possibilities for immersive experiences that blend real and virtual seamlessly. However, I do not only want to promote the technology. Besides the often discussed more obvious limitations of using AI as weapons – see the 1999 movie *Matrix* – we have many questions: How can we break the echo chambers accelerated by AI? How to keep data private and prevent unauthorised use of personal data? How can we protect ourselves against the automated requests of Gen AI dialogues, trying to sell me something?

In our paper on trust principles (Schäfer et al., 2023), we investigated the tension between using data on business models and protecting privacy. We found four principles to support companies in implementing

these measures: Firstly, let privacy and data-driven business go hand in hand. Secondly, put customers first and turn their privacy preferences into opportunities. Thirdly, align risk-management activities with the process of digital service development. Finally, use technology to professionalise legal processes.

Rather sooner than later, I expect, together with my Machine Learning colleague Damian Borth, that everybody gets his or her personal AI agent whom I trust will become the gatekeeper to manage my personal information overload. Companies like Apple, with strong privacy principles, will gain trust.

CN: How does AI affect the job market?

OG: AI influences employment, but we already had the same fear in the seventies with the advent of industrial robots. We all must learn how to work with the new technologies. Some jobs will be replaced or reduced; others will just be enriched. In the long run, many new types of jobs will be created, like AI ethicist, AI content curator, AI communication specialist, and AI data steward – to name a few. However, in the short term, there will be structural unemployment since not everybody can keep up with the pace of transformation. In the words of my HBS colleague Karim Lakhani, AI will not replace humans. Nevertheless, humans with AI will replace humans without AI.

NH: That is right. We are already seeing that in areas where AI has become very advanced, like in the games of Chess and Go, humans who use AI systems to train themselves or work as centaurs with AI systems outperform the best 'lone wolf' human players. In my opinion, humans will continue to play a vital role in developing AI systems. Our ability to design AI systems and select the most impactful and exciting use cases will remain highly relevant.

CN: How should businesses prepare for AI integration while minimising risks?

OG: Businesses need a solid understanding of AI capabilities and limitations. Decision-makers should be informed about generative AI's potential.

Responsible AI development is critical, addressing biases in data and ensuring transparency with customers about AI involvement in content creation. For all companies, it is essential to become familiar with the new technology and its disruptive potential. Overall, companies survive if they learn faster than the pace of the changing environment. The speed of change is incredible if you see the improvement of Generative AI during the last months. So, we must keep up with the learning process.

CN: Do you have any final advice for small businesses starting with AI?

NH: If you still need to, start experimenting now. The great thing about the current state of AI is that the ecosystem has evolved enough that so many resources can help everyone get started quickly. There are cloud-based machine learning platforms like Amazon SageMaker or similar offerings from Google and Microsoft that can help you get started and allow you to scale up quickly. Many external partners can accelerate your AI journey as well. One of the critical things to keep in mind is that there are myriad options out there, but to get lasting benefits from your foray into AI, it is essential to focus on areas where you can derive real business value, be that in terms

of improving efficiency or creating new opportunities.

OG: Exactly. To summarise our advice, I suggest thinking big, starting small, failing cheap, and learning fast.

In conclusion, Oliver Gassmann and Naomi Haefner's insights have shed crucial light on the forthcoming evolution of generative AI, its transformational implications for businesses, and how they can use AI to innovate their business models. The potential effects that AI will have on business model innovation and businesses will naturally be a cause of uncertainty for managers (see also Massa, 2023), who will need to analyse how AI plays into the overall digital strategies and transformation of the company (Silvi et al., 2023) as well as other current technological revolutions such as Blockchains (Schmuek, 2023) and the Metaverse (Rosenstand et al., 2023). Besides the ethical concerns relating to the introduction of AI, potential regulation could also affect companies' operational spaces (Nielsen, 2023). A balanced approach is crucial as we navigate these changes, leveraging AI's potential while upholding ethical considerations. The horizon is bright for those who harness AI's power thoughtfully.

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