

# AI-BASED BUSINESS MODEL INNOVATION: A CHATGPT INTEGRATION APPROACH

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This paper addresses a significant gap in the current literature by exploring the configuration of AI to support the process of business model innovation. Design science research is applied, and a ChatGPT-based prototype is developed to generate business models by recombining industry-independent business model patterns. The aim is therefore to investigate how such an AI assistant can be effectively configured. The study uses case studies from various industries to demonstrate the configured chatbot and evaluate its ability to adapt to different industry contexts and provide customized, innovative business models. The findings were used for refining the prototype, demonstrating its capabilities and evaluating the results. The assessment of the usability and performance of the AI assistant indicates the potential of the prototype and future developments. The study shows that the explorative configuration process can serve as a blueprint for all researchers and practitioners who want to develop innovative business models.

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## 1 Introduction

There is broad consensus in both the literature and in practice that the long-term competitive success of companies depends on their ability to develop innovative business models (Hedman & Kalling, 2003). However, the nature of Business Model Innovation (BMI) remains inherently complex and unpredictable (Chesbrough, 2010; Lindgardt et al., 2009). Organisations have to deal with considerable ambiguity and uncertainty, which requires a substantial investment of time and energy to explore various possibilities before an optimal solution can be found (Osterwalder & Pigneur, 2010). Therefore, creativity and divergent thinking are crucial parts of developing an innovative Business Model (BM) (Gassmann et al., 2014).

In the past, it was assumed that this creativity could only be achieved by humans. However, in 2020 Amabile proposed that creativity could also be achieved by Artificial Intelligence (AI) in the future. In 2021 Haefner et al. discussed AI's potential to undertake traditional human tasks in organizations, particularly in innovation. They highlighted recent advancements in AI algorithms, indicating AI's potential to address the more challenging aspects of innovation management, such as generating completely novel ideas. A mere year later, in November 2022, the release of OpenAI's ChatGPT significantly improved AI's capabilities in producing human-like work (Dell'Acqua et al., 2023; OpenAI, 2022). Given these capabilities, the integration of human work with AI presents both fundamental challenges and opportunities, especially in knowledge-intensive domains, such as BMI.

These Generative AI (GenAI) models, such as ChatGPT, create new data samples based on learned patterns (Feuerriegel et al., 2023). This presents a significant opportunity to use GenAI for BMI, as it can learn similarities in BMs, known as Business Model Patterns (BMPs), including characteristics, arrangement of building blocks and behaviours (Osterwalder & Pigneur, 2010). Based on these patterns, GenAI should then be able to create new BMs.

Nevertheless, every GenAI model is incomplete and necessitates additional fine-tuning for specific tasks (Feuerriegel et al., 2023). Currently, there is no research on how those AI assistants can be effectively configured to utilize BMPs for developing innovative BMs. Thus, this paper seeks to answer the research question: *How can AI*

*assistants, particularly ChatGPT, be configured to utilize business model patterns for developing innovative business models across industries?*

This paper contributes to the existing literature by providing insights into the integration of AI in innovation management, particularly in BMI. In addition, the paper offers a guideline for practitioners to utilising AI capabilities to enhance BMI.

## 2 Theoretical and Technological Foundation

### 2.1 Business Model

Osterwalder and Pigneur (2010, p. 14) define a BM as the rationale underlying how an organization “creates, delivers, and captures value”. That is analogous to a blueprint for a strategy, which is executed through organizational structures, processes and systems. A BM comprises nine essential components: customer segments, value proposition, channels, customer relationships, revenue streams, key resources, key activities, key partnerships and cost structure. Collectively, these elements constitute the Business Model Canvas (BMC), a tool designed to illustrate and assess both existing and prospective BMs (Osterwalder & Pigneur, 2010).

To improve the understanding of BMs, an additional framework known as the Magic Triangle can be integrated into the BMC (Gassmann et al., 2014). This framework introduces four critical dimensions that align with the nine components of the BMC: who the customer is, what the customer is purchasing, how the product or service is produced, and why the business is profitable. The “who-what-how-why” framework (Gassmann et al., 2014) is a descriptive approach to BMs. The initial two dimensions (“who” and “what”) pertain to external aspects, whereas the latter two dimensions (“how” and “why”) relate to internal aspects.

The arrangement of the building blocks of a BM can be represented by BMPs. Furthermore, empirical studies have shown that the use of BMPs enables companies to reduce the effort required to develop BMs, while the pattern library reliably increases the opportunities for innovation (Lüttgens & Diener, 2016). This is consistent with the findings of Gassmann et al. (2014), who discovered that 90% of all new BMs are not entirely original but are derived from 55 existing patterns. The key to success lies in the ability to identify and apply successful patterns from other

industries to one's own. This process entails comprehending the patterns, translating them into a contextually relevant framework, recombining them in a manner that is pertinent to one's industry, and transferring them in an efficacious manner (Enkel & Mezger, 2013). By creatively imitating BMs from other industries, a business can therefore position itself as an innovation leader within its industry.

Based on these BMPs, Gassmann et al. (2014) developed the Business Model Navigator (BMN), a tool for streamlining BMI through the recombination of the 55 patterns. It is designed to be used in a workshop setting and follows four steps: initiation, ideation, integration and implementation.

## **2.2 Large Language Models**

The advent of Large Language Models (LLMs) has significantly changed the interaction dynamics between chatbots and users. LLMs are trained on huge and diverse language datasets in advance, enabling them to understand and generate texts that closely mimic human communication in a variety of contexts (Pappula & Allam, 2023). Furthermore, it is possible to fine-tune LLMs for specific applications, industries or user bases, allowing for a more personalized user experience. LLMs serve as the basis for GenAI models (Chui et al., 2023). The term “generative” is employed to describe the capacity of the model to generate content that is both novel and meaningful, based on the training data (Feuerriegel et al., 2023).

A prevalent family of LLMs are generative pre-trained transformers (GPTs) that are used in the conversational agent ChatGPT (Feuerriegel et al., 2023). The latest version (as of October 2024), GPT-4o, shows superior performance in Massive Multitask Language Understanding (MMLU), a crucial benchmark test for evaluating the multitask accuracy of text models (Hendrycks et al., 2021), compared to other language models (OpenAI, 2024).

GPT Builder is a tool that allows users to create customized versions of ChatGPT tailored for specific tasks or domains. Since the GPT Builder was only announced by OpenAI in November 2023, there is little academic research and best practices for customising GPTs. So far, only a few studies have been published that focus on LLM technology for BMI (e.g. Collins et al., 2024; Aagaard & Tucci, 2024; Machucho & Ortiz, 2025). However, the authors do not document the process, but

focus on the results of the customised GPT or address the topic from a more general perspective. The present paper aims to fill this research gap by examining and detailing the configuration process.

### 3 Methodology

Our research focusses on the prototype development of the AI assistant in order to answer the research question. The procedure used in the study adheres to the Design Science Research Methodology (DSRM) as proposed by Peffers et al. (2007). The DSRM was selected due to its systematic approach to the creation and evaluation of information system (IS) artifacts, which aligns with the objectives of this study. The research design follows in particular the adaption by Fayoumi and Loucopoulos (2021) in order to ensure academic rigor. It consists of five steps:

The first step, *problem identification*, addresses the inherent complexity and unpredictability of BMI. Secondly, the primary *objective of our study* was to improve the BMI process and thereby increase its reliability, efficiency and straightforwardness. To achieve this, the solution involves the implementation of an AI assistant that automates the key aspects of the BMI process. Thirdly, in terms of *design and development*, the GPT-based AI assistant should comprehend and utilize various BMPs, providing a structured framework for generating novel BMs in different industries. The fourth step was the *demonstration* of the configured GPT. This step focused on a technical assessment of the prototype, i.e. the GPT's ability to accurately follow its configuration and to create coherent BMs based on the BMPs. The demonstration was carried out on the basis of case studies from different industries. After completing this step, we returned to the design and development phase to improve the prototype's effectiveness. Then we proceeded to the fifth step, *evaluation*, by presenting the revised prototype of the chatbot to eight high-profile experts and to assessing its applicability based on the resulting interviews.

### 4 Design and Development

This section is about creating the artefact, i.e. using the GPT Builder to develop a customised GPT model for business model innovation using BMPs. The tool was used because it showed the best performing LLM at the time of our investigation, as described in subsection 2.2.

## 4.1 Creation of the Training Data

Initially, a comprehensive set of BMPs was identified and curated from existing literature. These patterns were integrated into the GPT Builder. To facilitate this process, data was primarily gathered from the website *businessmodelnavigator.com*, as it provides more recent information than the book by Gassmann et al. (2014). An Excel spreadsheet was set up that encompasses the total of 55 (plus 5 additional) BMPs. The data provided for each pattern includes several critical elements: a) pattern name serving as the identifier for each BMP, b) pattern description containing a summary of the key characteristics and principles of the pattern, c) BM components including the “how”, “what”, “who” and “why” details according to the Magic Triangle framework, d) industries in which each pattern is predominantly deployed, e) insights into the most frequently occurring patterns in relation to each other, providing an overview of potential synergies and common combinations, and f) examples of companies that have implemented these patterns.

Additionally, the GPT was provided with information about the process it should follow. Given that the objective of the chatbot is to develop new BMs, the GPT was trained exclusively on the design phase (i.e. initiation, ideation and integration), which involves conceptualizing the proposed BM, and not on the realization phase, which would include the implementation of the aforementioned BM.

## 4.2 Configuration of the Chatbot

The configuration process takes place in a conversational setting, wherein the user interacts with an AI (in this case ChatGPT) that helps him/her configure his/her own GPT model. The process starts with “Create” and is followed by the system’s question “What would you like to make?”. The process commenced with the following prompt to outline the GPT’s objective and included uploading the Excel spreadsheet with detailed information on the 60 BMPs:

*“Make a strategy and innovation expert who creates innovative business models by recombining different business model patterns. It should use only the 60 business model patterns provided in the attached Excel spreadsheet. The Excel list also includes a column called “BM Components,” which refers to the Magic Triangle (Gassmann et al., 2014). A business model defines who your customers are, what you sell, how you produce your offering and why your business is profitable. Who-what-how-why describes a business model where the first two (who and what) address its external aspects*

*and the second two (how and why) address its internal dimensions. It should follow 3 steps: 1. initiation: It should analyze the ecosystem of the company (players and drivers of change) and also the current business model (if there is one); 2. Ideation: It should adapt the patterns, so it should challenge the current business model using the 60 business model patterns by applying the similarity principle and the confrontation principle; 3. Integration: It should now integrate these ideas into a new business model, making it internally and externally consistent.”*

Based on this prompt, the AI suggested a name (“Innovative Strategist”) and a profile picture for the GPT, both of which were accepted. Next, the communication style of the Innovative Strategist was refined to ensure that it would act in a manner consistent with that of a consultant in their interactions with clients. This is because the GPT should emulate the depth and expertise of a subject matter expert or, in this case, a consultant, in the field.

After these first steps, a preview of the GPT was created to check the chatbot’s configuration so far. A new chat appeared to the right of the configuration window (i.e. the chat in which we had configured the GPT), in which we could test now our new (own) GPT. Accordingly, the so-called “Silly Cow Exercise” was employed. In accordance with the typical procedures employed in conventional BMI settings, the chatbot was instructed to illustrate a BM utilizing a cow (see details in Osterwalder & Pigneur, 2010).

The outcome of this preliminary trial was then employed to further improve the GPT. This process was highly iterative, entailing numerous cycles of testing and refinement. Moreover, the GPT explained certain aspects of the BMI process to the user, instead of applying them. For example, the GPT explained what “challenging the current business model (external/internal)” is instead of applying it itself. Therefore, another prompt was entered to ensure that the model adapts the patterns during the ideation phase according to the similarity and confrontation principle.

In conclusion, in addition to the initial prompt, 19 further prompts were employed to refine the behavior of the GPT. As a result of these refinements, the GPT was able to categorize the patterns exactly according to the dimensions of the Magic Triangle and to use only the provided patterns. Furthermore, the GPT has demonstrated the ability to follow the prescribed three-stage process (initiation, ideation and integration) and generate coherent BMs.

## 5 Demonstration

This phase of the DSRM is intended to assess the efficacy of the configured GPT in realistic settings. To this end, we have selected case studies from various industries and applied the chatbot to them to generate new BMs. This phase serves to validate the experimental configuration and training conducted in the previous phase, thus ensuring that the AI assistant can operate effectively in diverse industries.

### 5.1 Case Selection

To ensure a comprehensive analysis, five cases were selected from different industries, namely consumer goods, information technology, retail, financial services and media. The cases not only represent a range of different industries, but also different levels of complexity defined by the amount of data involved and the length of conversational dependencies. The reason for this was to thoroughly evaluate the chatbot's ability to handle and respond to different levels of complexity and long-term dependencies. In addition, both start-up and established companies were included to gain insights into the chatbot's performance at different stages of organizational maturity.

### 5.2 Application of the Configured GPT

For each of the cases we formulated a brief instruction which was individually entered into our GPT "Innovative Strategist". The instructions were formulated as a customer would speak to a consultant. All responses were documented.

The procedure can be shown at the example of the company "air up" from consumer goods industry. air up is a start-up company that was launched in 2019 ([www.air-up.com](http://www.air-up.com)). It offers a special water bottle that alters the flavor of the water simply by adding scents. Distinctive "aroma pods are affixed to the top of the bottle to achieve this effect. Based on that concept, the chatbot was queried with the following prompt:



*“I’ve developed a game-changing product: a water bottle that changes the flavor of the water without adding any ingredients. All you have to do is stick different pods on top of the water bottle and it instantly changes the flavor. I’m looking for your help in creating a business model that will allow me to disrupt the market with my idea.”*

Table 1 summarizes the results of this one of five case studies examined. A transcript of the complete result of this case is available in the Appendix A.

**Table 1: Results of the demonstration phase (example of the consumer goods case)**

Case	Recommended patterns	Business model
Consumer Goods: “air up”	<ul style="list-style-type: none"> <li>- Razor and Blade</li> <li>- Subscription</li> <li>- Lock-in</li> <li>- Cross-Selling</li> <li>- Mass Customization</li> <li>- Experience Selling</li> </ul>	<p><b>Who:</b> Health-conscious individuals; Fitness enthusiasts; Environmentally conscious consumers; Tech-savvy consumers looking for innovative products</p> <p><b>What:</b> Core Product: A reusable water bottle that offers instant flavour changes without adding any ingredients; Supplementary Products: A variety of flavour pods catering to different tastes and dietary preferences; Unique Experience: An app or community platform that enhances user engagement and tracks hydration habits</p> <p><b>How:</b> Design and Manufacturing: Collaborate with innovative flavour technology firms and high-quality manufacturers; Distribution Channels: Utilize online platforms, health and fitness stores, and direct partnerships with wellness brands; Customer Interaction: Develop a robust online presence with a user-friendly website and app, offering customization and subscription options</p> <p><b>Why:</b> Razor and Blade Model: Generate recurring revenue through the sale of flavour pods; Subscription Service: Ensure steady income through subscription plans for regular pod deliveries; Premium Pricing for Customization: Charge a premium for personalized pods and bottle designs</p>

## 6 Evaluation

Following the DSRM, the prototype of the GPT was presented to industry experts with the intention of assessing its usability (Rubin & Chisnell, 2008). For the study, semi-structured interviews were conducted, which are particularly suitable for usability-related questions. The interviewees were selected based on their specific knowledge and experience in areas relevant to the GPT’s objectives and who would potentially use the chatbot. Therefore, eight high-profile experts in the fields of venture building, strategy consulting, BMI, and business development across diverse

domains were selected (Rubin & Chisnell, 2008). Each expert (E) was provided with a concise overview of the objectives of the chatbot, followed by a demonstration of the aforementioned case studies. Appendix B provides a summary of each expert's expertise. The duration of each interview was on average 34 minutes including an extensive demonstration of the prototype.

The interviews were recorded and then transcribed using the speech recognition software Whisper to facilitate the analysis. For the interpretation of the material, inductive category formation was employed which included the prototype's usefulness, efficiency, effectiveness, satisfaction and learnability (Rubin & Chisnell, 2008). The analysis was carried out in eight steps, which were suggested by Mayring (2014). This resulted in four main categories (initial impression, functional capabilities, usability in practice, future developments) and nine subcategories. A summary of the interviewees' evaluations is provided in Appendix C.

## 7 Discussion

The first phase of prototype testing, based on the case studies, showed that the GPT was largely able to follow the structured BMI process, to analyze the request accurately and to identify relevant patterns from the provided list. Moreover, these patterns from different industries were effectively transferred and adapted to the specific case. This capacity is consistent with the innovation principles delineated by Gassmann et al. (2014). Furthermore, the GPT integrated these patterns into comprehensive and cohesive BMs, addressing all relevant dimensions in a systematic and coherent manner. These findings indicate that the exploratory configuration process presented in this study was both effective and reliable, thus confirming its efficacy.

However, the results varied across the case studies. Three pivotal issues were identified and subsequently addressed in the reconfiguration of the GPT. Two of these issues, namely the usage of patterns that are not included in the provided list and the omission of patterns after the ideation phase, can be attributed to hallucinations of the chatbot. In our study, the GPT utilized patterns not explicitly provided in the Excel spreadsheet. These instances, in which the model generated extrinsic hallucinations by drawing on information not provided before, are consistent with the behavior described by Maynez et al. (2020). This problem likely

stems from the nature of LLMs like GPT-4o, which are pre-trained on vast amounts of data. This pre-training can sometimes cause the model to produce hallucinated content if the data is inadequate (Zhang et al., 2023).

The third issue is related to the lack of coverage of the four dimensions of the Magic Triangle and was mainly observed in the first two cases. The chatbot did not suggest any patterns that covered all four dimensions of the BM, or rather, no patterns that considered the dimensions “who” and “how”. Although the chatbot also did not suggest a pattern for the “who” dimension in the third and fourth case, this omission was appropriate since a BM was already provided and not all dimensions needed to be addressed according to Gassmann et al. (2014). The missing “how” dimension can be attributed to the hallucinations as the omitted patterns would have covered this dimension.

The second phase of prototype testing was based on the assessments of professionals, who unanimously expressed a positive first impression of the prototype. This suggests that the experts, as potential users, would also use the GPT productively in actual application scenarios (Rubin & Chisnell, 2008).

A particularly noteworthy aspect was the tool’s capacity to save a substantial amount of time and effort for certain tasks. This indicates that the GPT is highly effective at automating seemingly creative but repetitive tasks and accelerating decision-making processes. This finding corresponds to Kumar et al. (2024), who found efficiency gains from integrating AI technologies into business automation. Furthermore, it is consistent with the findings of Candelon et al. (2023), who investigated the efficacy of AI assistants in product innovation.

Nevertheless, several areas for improvement were identified. One area for enhancement is the inclusion of supplementary examples. The repeated request for concrete examples to illustrate the presented patterns indicates that users find it challenging to translate theoretical models into practical applications. Thus, the incorporation of case studies and real-world examples could markedly enhance the GPT’s usability and effectiveness.

Another crucial area is customization, i.e. the tool should be more adaptable to the specific needs of individual users, suggesting that a universal approach may be inadequate. This means that the tool should include features that assess users' knowledge and customize their responses accordingly to improve the user experience for persons at different levels of expertise.

Although this paper offers important insights into the configuration and application of GPT models, there are several limitations to be aware of. First, further iterations of the prototype could have been used to assess the impact of different prompting variants on performance. Second, the lack of information about the source and methodology used by the GPT to obtain its data makes it impossible to determine whether the GPT merely replicated a BM or created an entirely new one. This aspect is closely linked to the black box problem of AI (von Eschenbach, 2021). Third, key variables such as effectiveness and efficiency were not quantitatively measured. Quantitative assessment could have strengthened the results (Rubin & Chisnell, 2008).

## 8 Conclusion

The results of this study reveal that tools like ChatGPT, when configured appropriately, can significantly improve the innovation process by providing structured, creative solutions that are both practical and adaptable. In this regard, the main contribution of our analysis lies in the area of BMI and how this can be supported by an appropriate AI configuration. It is crucial to note that the results of this study are time-limited and may quickly become outdated due to the rapid progress in LLMs. As AI continues to grow, its role in strategic management is likely to increase, making the insights gained from this research increasingly relevant for both academic research and practical application.

## References

- Aagaard, A., & Tucci, C. (2024). AI-Driven Business Model Innovation: Pioneering New Frontiers in Value Creation. Aagaard, A. (eds) Business Model Innovation. Game Changers and Contemporary Issues. Palgrave Macmillan. Cham. 295-328.
- Amabile, T. M. (2020). Creativity, Artificial Intelligence, and a World of Surprises. *Academy of Management Discoveries*, 6(3), 351-354.
- Candelon, F., Kraymer, L., Rajendran, S., & Zuluaga Martínez, D. (2023). How People Can Create—and Destroy—Value with Generative AI. BCG Henderson Institute, Boston Consulting Group.

- Chesbrough, H. (2010). Business Model Innovation: Opportunities and Barriers. *Long Range Planning*, 43(2-3), 354-363.
- Chui, M., Hazan, E., Roberts, R., Singla, A., Smaje, K., Sukharevsky, A., Yee, L., & Zimmel, R. (2023). The economic potential of generative AI: The next productivity frontier. McKinsey & Company.
- Collins, B. R., Black, E. W., & Rarey, K. E. (2024). Introducing AnatomyGPT: A customized artificial intelligence application for anatomical sciences education. *Clinical Anatomy*, 37(6), 661-669.
- Dell'Acqua, F., McFowland, E., Mollick, E. R., Lifshitz-Assaf, H., Kellogg, K., Rajendran, S., Krayner, L., Candelon, F., & Lakhani, K. R. (2023). Navigating the jagged technological frontier: field experimental evidence of the effects of AI on knowledge worker productivity and quality. Working Paper, No. 24–013. Harvard Business School. Boston, MA.
- Enkel, E., & Mezger, F. (2013). Imitation Processes And Their Application For Business Model Innovation: An Explorative Study. *International Journal of Innovation Management*, 17(1), 1-34.
- Fayoumi, A., & Loucopoulos, P. (2021). Bridging the strategy execution gap of designing intelligent talent acquisition systems using enterprise modelling and simulation. *Enterprise Information Systems*, 17(6), 781-816.
- Feuerriegel, S., Hartmann, J., Janiesch, C., & Zschech, P. (2023). Generative AI. *Business & Information Systems Engineering*, 66(1), 111-126.
- Gassmann, O., Frankenberger, K., & Csik, M. (2014). *The Business Model Navigator: 55 Models That Will Revolutionise Your Business*. FT Publishing. Upper Saddle River, NJ.
- Haefner, N., Wincent, J., Parida, V., & Gassmann, O. (2021). Artificial intelligence and innovation management: A review, framework, and research agenda. *Technological Forecasting and Social Change*, 162(C).
- Hedman, J., & Kalling, T. (2003). The Business Model Concept: Theoretical Underpinnings and Empirical Illustrations. *European Journal of Information Systems* 12(1), 49-59.
- Hendrycks, D., Burns, C., Basart, S., Zou, A., Mazeika, M., Song, D., & Steinhardt, J. (2021). Measuring Massive Multitask Language Understanding. *Proceedings of the 9th International Conference on Learning Representations*, virt.
- Lindgardt, Z., Reeves, M., Stalk, G., & Deimler, M. S. (2009). *Business Model Innovation – When the Game Gets Tough, Change the Game*. Boston Consulting Group.
- Lüttgens, D., & Diener, K. (2016). Business Model Patterns Used as a Tool for Creating (new) Innovative Business Models. *Journal of Business Models*, 4(3), 19-36.
- Machucho, R., & Ortiz, D. (2025). The Impacts of Artificial Intelligence on Business Innovation: A Comprehensive Review of Applications, Organizational Challenges, and Ethical Considerations. *Systems*, 13(4), 264.
- Mayring, P. (2014). *Qualitative content analysis: theoretical foundation, basic procedures and software solution*. Klagenfurt, Austria.
- Maynez, J., Narayan, S., Bohnet, B., & McDonald, R. (2020). On Faithfulness and Factuality in Abstractive Summarization. *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics*, 1906-1919.
- OpenAI (2022). Introducing ChatGPT. Retrieved July 5, 2024 from <https://openai.com/index/chatgpt/>.
- OpenAI (2024). Hello GPT-4o. Retrieved July 20, 2024 from <https://openai.com/index/hello-gpt-4o/>.
- Osterwalder, A., & Pigneur, Y. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*. John Wiley & Sons. Hoboken, NJ.
- Pappula, S. R., & Allam, S. R. (2023). LLMs for Conversational AI: enhancing chatbots and virtual assistants. *International Journal of Research Publication and Reviews*, 4(12), 1601-1611.
- Peppers, K., Tuunainen, T., Rothenberger, M. A., & Chatterjee, S. (2007). A Design Science Research Methodology for Information Systems Research. *Journal of Management Information Systems*, 24(3), 45-77.

- Rubin, J., & Chisnell, D. (2008). *Handbook of Usability Testing: How to Plan, Design, and Conduct Effective Tests* (2nd ed.). Wiley Publishing. Indianapolis, IN.
- von Eschenbach, W. J. (2021). Transparency and the black box problem: Why we do not trust AI. *Philosophy & Technology*, 34(4), 1607-1622.
- Zhang, Y., Li, Y., Cui, L., Cai, D., Liu, L., Fu, T., Huang, X., Zhao, E., Zhang, Y., Chen, Y., Wang, L., Luu, A. T., Bi, W., Shi, F., & Shi, S. (2023). Siren's Song in the AI Ocean: A Survey on Hallucination in Large Language Models. *arXiv:2309.01219*. Cornell University, Ithaca, NY.

## Appendix A:

## Output of the GPT at the example of the consumer goods case:

1	<p><b>USER:</b> I've developed a game-changing product: a water bottle that changes the flavour of the water without adding any ingredients. All you have to do is to stick different pods on top of the water bottle and it instantly changes the flavour. I'm looking for your help in creating a business model that will allow me to disrupt the market with my idea.</p>
2	<p><b>CHATGPT:</b> That sounds like an exciting and innovative product! Let's go through the process of developing a robust business model for your flavoured water bottle using the three phases: initiation, ideation, and integration.</p> <p><b>Initiation Phase</b></p> <p><b>1. Ecosystem Analysis:</b></p> <ul style="list-style-type: none"> <li>– <b>Players:</b> <ul style="list-style-type: none"> <li>○ <b>Direct Competitors:</b> Other water bottle companies, flavoured water brands.</li> <li>○ <b>Indirect Competitors:</b> Beverage companies, especially those focusing on flavoured drinks.</li> <li>○ <b>Partners:</b> Pod manufacturers, distribution channels (online retailers, physical stores), marketing agencies.</li> </ul> </li> <li>– <b>Drivers of Change:</b> <ul style="list-style-type: none"> <li>○ <b>Technological Advances:</b> Innovation in flavour technology and materials.</li> <li>○ <b>Consumer Trends:</b> Increasing demand for health-conscious, sugar-free beverages.</li> <li>○ <b>Environmental Concerns:</b> Growing preference for reusable products to reduce plastic waste.</li> </ul> </li> </ul> <p><b>2. Current Business Model (if any):</b> Not applicable.</p> <p><b>Ideation Phase</b></p> <p><b>1. Challenging the Current Business Model:</b> Using the 60 business model patterns from the provided list, let's explore potential patterns that could innovate your business model:</p> <ul style="list-style-type: none"> <li>– <b>Razor and Blade:</b> Sell the water bottles at a lower margin or even at cost, while making higher margins on the flavour pods. <ul style="list-style-type: none"> <li>○ <i>Description:</i> Offer the primary product (razor) at a low price and earn profits from consumables (blades).</li> </ul> </li> <li>– <b>Subscription:</b> Offer a subscription model where customers receive new flavour pods regularly.</li> </ul>

	<ul style="list-style-type: none"> <li>○ Description: Shift from selling products to providing a service, generating recurring revenue.</li> <li>– <b>Lock-in:</b> Develop proprietary pods that only work with your water bottles. <ul style="list-style-type: none"> <li>○ <i>Description:</i> Create dependency on your consumable products to ensure repeated purchases.</li> </ul> </li> <li>– <b>Cross-Selling:</b> Partner with health and wellness brands to offer bundled products or discounts. <ul style="list-style-type: none"> <li>○ Description: Increase sales by offering related products to your customer base.</li> </ul> </li> <li>– <b>Mass Customization:</b> Allow customers to personalize their flavour experiences through custom pod options. <ul style="list-style-type: none"> <li>○ Description: Provide tailor-made products to meet individual customer preferences.</li> </ul> </li> <li>– <b>Experience Selling:</b> Create an immersive experience around the product, such as a community or app that tracks water intake and flavour preferences. <ul style="list-style-type: none"> <li>○ Description: Sell not just the product but the experience associated with it.</li> </ul> </li> </ul> <p><b>2. Application of Similarity and Confrontation Principles:</b></p> <ul style="list-style-type: none"> <li>– <b>Similarity Principle:</b> Analyse successful business models in the beverage industry (e.g., soda stream, coffee pods) and adapt their strategies.</li> <li>– <b>Confrontation Principle:</b> Challenge the norms in the reusable water bottle market by integrating high-tech features and unique value propositions.</li> </ul> <p><b>Integration Phase</b></p> <p><b>Magic Triangle of the New Business Model:</b></p> <ul style="list-style-type: none"> <li>– <b>Who (Target Customer):</b> <ul style="list-style-type: none"> <li>○ Health-conscious individuals</li> <li>○ Fitness enthusiasts</li> <li>○ Environmentally conscious consumers</li> <li>○ Tech-savvy consumers looking for innovative products</li> </ul> </li> <li>– <b>What (Value Proposition):</b> <ul style="list-style-type: none"> <li>○ <b>Core Product:</b> A reusable water bottle that offers instant flavour changes without adding any ingredients.</li> <li>○ <b>Supplementary Products:</b> A variety of flavour pods catering to different tastes and dietary preferences.</li> <li>○ <b>Unique Experience:</b> An app or community platform that enhances user engagement and tracks hydration habits.</li> </ul> </li> </ul>
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	<ul style="list-style-type: none"> <li>– <b>How (Value Chain):</b> <ul style="list-style-type: none"> <li>○ <b>Design and Manufacturing:</b> Collaborate with innovative flavour technology firms and high-quality manufacturers.</li> <li>○ <b>Distribution Channels:</b> Utilize online platforms, health and fitness stores, and direct partnerships with wellness brands.</li> <li>○ <b>Customer Interaction:</b> Develop a robust online presence with a user-friendly website and app, offering customization and subscription options.</li> </ul> </li> <li>– <b>Why (Profit Mechanism):</b> <ul style="list-style-type: none"> <li>○ <b>Razor and Blade Model:</b> Generate recurring revenue through the sale of flavour pods.</li> <li>○ <b>Subscription Service:</b> Ensure steady income through subscription plans for regular pod deliveries.</li> <li>○ <b>Premium Pricing for Customization:</b> Charge a premium for personalized pods and bottle designs.</li> </ul> </li> </ul> <p>This integrated business model should help you disrupt the market and create a strong, sustainable revenue stream.</p>
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## Appendix B:

### Overview of the participants of the expert interviews

ID of the interviewee	Brief description of relevant expertise
E1	Managing director of an IT company, responsible for the innovation of the current BM; co-founder of several companies
E2	Project manager core processes and digitalization at a large automotive company, responsible for internal start-up development and cooperations with start-ups
E3	Founder & CEO of a crypto service company; co-founder of digital transformation company; former strategy and innovation consulting experience at an international business consultancy
E4	Co-founder of a national consulting company, responsible for innovation management, digital strategy, and transformation
E5	Senior manager at an international business consultancy, responsible for finance transformation and innovation
E6	Partner at an international business consultancy, responsible for sales and marketing transformation
E7	Founder of a software development company, responsible for business and product strategy consulting; former product portfolio manager at a large international software company, responsible for BMI

E8	Venture builder at a large international logistics company, responsible for creating new BMs; co-founder of two start-up companies
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## Appendix C:

### Summary of the interviewees' evaluations

Main categories and subcategories	Assessments of the experts
<b>1. Initial Impression</b>	
Positive Impressions	E1, E2, E3, E4, E5, E6, E7, E8
Neutral or negative Impressions	E6
<b>2. Functional Capabilities</b>	
<b>a) Highlighted Features</b>	
Time and Effort Savings	E1, E4, E7
Structured Process	E2, E3, E6, E8
Creativity and Idea Generation	E2, E4, E6, E7, E8
Quality and Content	E1, E2, E3, E4, E5, E6, E7, E8
<b>b) Insufficient or Missing Features</b>	
Example	E3, E4, E5
Customization	E2, E3, E4, E8
Guidance	E2, E3, E5, E7
Visualization	E1, E3, E4, E6
<b>3. Usability in Practice</b>	
Challenges in Application	E1, E6
Would use the GPT	E1, E2, E3, E4, E5, E6, E7, E8
<b>4. Future Developments</b>	
Evaluation of BM	E6, E8
Implementation Steps	E1, E4, E7
Market and Financial Analysis	E3, E4, E7