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Generative AI Tools in Customer Service

Beyond the Hype of 'Prompt Engineering'

The adoption of artificial assistant tools (AAT) powered by generative artificial intelligence and large language models to support frontline employees (FLEs) opens up promising new use cases while also introducing changing skillset requirements and new challenges (e.g., in compliance and data security). In this paper, the authors explore AAT implementation in a customer contact center, drawing conclusions from a qualitative study of practical use cases, necessary FLE skills and data security requirements and solutions. Recommendations are provided for implementing AATs using the GPT-3.5 Turbo API.

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The rapid advancements in the field of artificial intelligence (AI), where tools possess elements of human intelligence, are extensively leveraged in today's service industry (Frey & Osborne, 2017; Huang & Rust, 2018). The capabilities of the adopted AI-powered tools are rapidly improving and increasingly overlapping with those of humans in recent years (Akter et al., 2023; Huang & Rust, 2020).

Especially noteworthy in this context is the release of ChatGPT in November 2022 – a chatbot based on the large language model (LLM) GPT-3.5 that utilizes deep learning to generate text that perfectly imitates human speech. This launch has created a new category of automation, with capabilities in analytical, creative, and writing tasks that have even achieved top scores in professional qualification exams such as the SAT (Brandl & Ellis, 2023; Dell'Acqua et al., 2023; Varanasi, 2023). ChatGPT – with an estimated 100 million active users (Brandl & Ellis, 2023) – has attracted phenomenal interest from both practitioners and researchers (Koc et al., 2023). Beyond its widespread usage and remarkable performance, it represents a transformative shift in automation, where its abilities overlap with those of the most creative, highly educated, and highly compensated workers (Dell'Acqua et al., 2023; Eloundou et al., 2023). Moreover, with the release of GPT-3.5 Turbo, an application programming interface (API) was made available to the public to connect ChatGPT to third-party applications. As a result, many companies are using this API to expand the functionalities of their existing tools (Lambert & Stevens, 2023).

It is therefore not surprising that customer service professionals are also beginning to see ChatGPT as an enhancement for workflows, processes, and existing tools, along with the potential challenges that might accompany its adoption (Demir et al., 2023; Marr, 2022). Building on this growing interest in ChatGPT and its transformative potential, this paper explores a specific example of an artificial assistant tool (AAT) deployed in contact centers that leverages GPT-3.5 API access. This research aims to shed light on how AATs may enhance the effectiveness of customer service work in calls and personal meetings while also addressing the challenges this entails. The following questions appear to be of particular relevance in this context:

(1) What are the primary use cases in which FLEs leverage the enhanced functionalities of their AAT, made possible by the integration of the GPT-3.5 API?
(2) How can managers prepare their employees to work effectively with AATs?
(3) How can the GPT-3.5 Turbo API be used in accordance with European data security and compliance guidelines?

To provide answers to these questions, a qualitative investigation was started in the spring of 2023. The results of desk research, the review and analysis of existing literature, a qualitative interview with the Chief Data Officer of the company selected for this case study and a qualitative analysis of 5664 prompts from 30 FLEs – prompts being the chat commands of the FLEs interacting with the AAT – form the empirical basis of the present study.

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Literature Review

AI Tools in the Customer Service Sphere

Researchers agree that new AI tools will fundamentally transform work in customer service. Huang and Rust (2018, p. 34) go so far as to warn of 'a fundamental threat to human employment', while other authors see opportunities for human–AI collaboration (Chui et al., 2023; Decker et al., 2017; Wirtz et al., 2018). In more recent academic discussions, scholars have started to explore the use of AI tools, such as ChatGPT, in various service contexts. This includes the potential application of ChatGPT in the customer service of medium and small businesses (Subagja et al., 2023), the support of highly skilled knowledge workers by ChatGPT in the consulting field (Dell'Acqua et al., 2023) or its use in responding to customer complaints (Koc et al., 2023); new applications are constantly being added. Additionally, there is a growing number of blog posts and business press articles that envision future use cases, highlighting its potential to enhance the efficiency of contact centers. In conclusion, thought leaders share the common view that tasks at the frontier of ChatGPT capabilities can lead to significant gains in productivity and quality, but note that this is case-specific (Bouazzati, 2023; Dell'Acqua et al., 2023; Jain,

2023; Murphy, 2023). Notably, the desk research did not identify any papers that explicitly address the actual use of an AAT in contact centers, utilizing the GPT-3.5-API.

Upskilling Needs for Frontline Employees

There is a growing body of research on the impact of AI on the changing role of FLEs and the required skillset (Dwivedi et al., 2023; Larivière et al., 2017; Lim et al., 2022). Recent studies focus on the collaboration of FLEs with AI tools. However, they are predominantly concerned with theories of skills to be replaced by AATs (De Keyser et al., 2019; Huang & Rust, 2018, 2020) and design features related to user perception and acceptance (Boden et al., 2006). In recent months, scholars have also started to investigate the FLEs' changing role in customer service due to tools like ChatGPT. Generally, executives are informed to upskill employees in analytical and creative thinking as well as AI and big data (Di Battista et al., 2023; Eloundou et al., 2023; Reynolds et al., 2021). In direct relation to ChatGPT, three key areas for employee development stand out: prompt engineering, data protection and compliance literacy, as well as agile, scenario-based learning. The skill of 'prompt engineering' is especially emphasized in recent business press as being of great importance in the near future (Liu & Chilton, 2022; Oppenlaender et al., 2023; Smith, 2023). In this context, the skill of 'prompt engineering' refers to the ability to formulate technical questions that specify (1) the context, (2) the relevant information, and (3) the desired output (Dang et al., 2022; Dwivedi et al., 2023). Very recently, a few scholars have argued that it is not the skill of prompt engineering that will be important, but rather problem formulation. They argue that AI models are evolving so quickly that there is no need to upskill all workers to become experts in prompt engineering (Acar, 2023). Therefore, the debate about future upskilling needs remains open, which instigated a deeper examination of 'prompt engineering' in the context of FLEs and AATs in this study.

Challenges of Working with GPT-Based Technology

As generative AI models continue to advance, both individual users and businesses are navigating a landscape fraught with various risks when utilizing tools like ChatGPT (Dwivedi et al., 2023; Marr, 2022). Based on the authors' experience, the following points are most critical in this context:

- **Data storage concerns:** Many AI services, including OpenAI`s offerings, store user data in the US.
- **Data usage for model training:** User data is often utilized for training the models, which can lead to concerns about how personal information is being used.
- **Regulatory compliance:** Not in line with GDPR when data is sent to a US-based API.
- **Legal framework ambiguities:** The legal agreements, including data processing agreements (DPAs), privacy statements, and terms of service for ChatGPT and similar tools, may lack clarity or comprehensiveness, leading to uncertainties.
- **Model hallucinations:** Hallucination of the models might create fake outputs.
- **Data timeliness:** Outdated information, as the OpenAI model is trained with data up until 2021 only.

Case Study

GPT-3.5 Integration: Conceptual Overview

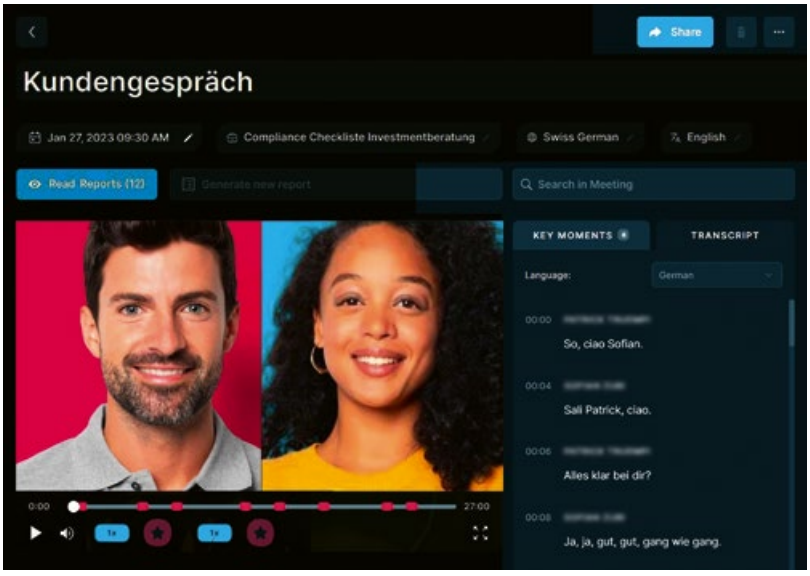
As mentioned above, in this paper the authors examine the adoption of an AAT in customer service situations that already use the GPT-3.5 Turbo API. The analyzed tool is a service platform provided by a Swiss-based B2B SaaS (software as a service) company focusing on conversational intelligence. The platform is able to record client conversations and leverages LLMs, namely OpenAI's GPT-3.5, to generate custom reports. The core functionality of the tool is the ability to automatically record, transcribe and subsequently analyze conversations. The platform consists of an online app as well as a mobile app for recording offline meetings. The tool uses generative AI to turn unstructured call data into structured customer relationship management (CRM) entries. Furthermore, it identifies key phrases to help FLEs spot new upselling and cross-selling opportunities. Additionally, during or after a meeting, FLEs can engage with the built-in chatbot to review the call, generate a transcript or summaries, and assess customer sentiment (see figure 1) (Unique, 2023).

GPT-3.5 Integration: Compliance & Data Protection

Compliance, data protection, and IT security are key issues for GPT-based solutions. For this reason, the SaaS company has designed a highly secure IT setup and adheres to the principle of data minimization, incorporating a robust compliance setup. For enhanced compliance, data protection, and IT security, a so-called compliance layer is in place for using the GPT API. The compliance layer, which consists of seven pillars, refers to a set of principles, processes, and control structures to comply with legal, regulatory, and internal requirements for their mainly financial services customers (see figure 2).

This proactive approach helps reduce the potential for credential misuse, ensures secure storage and management of

Figure 1: AAT-Interface – an Overview of the Capabilities

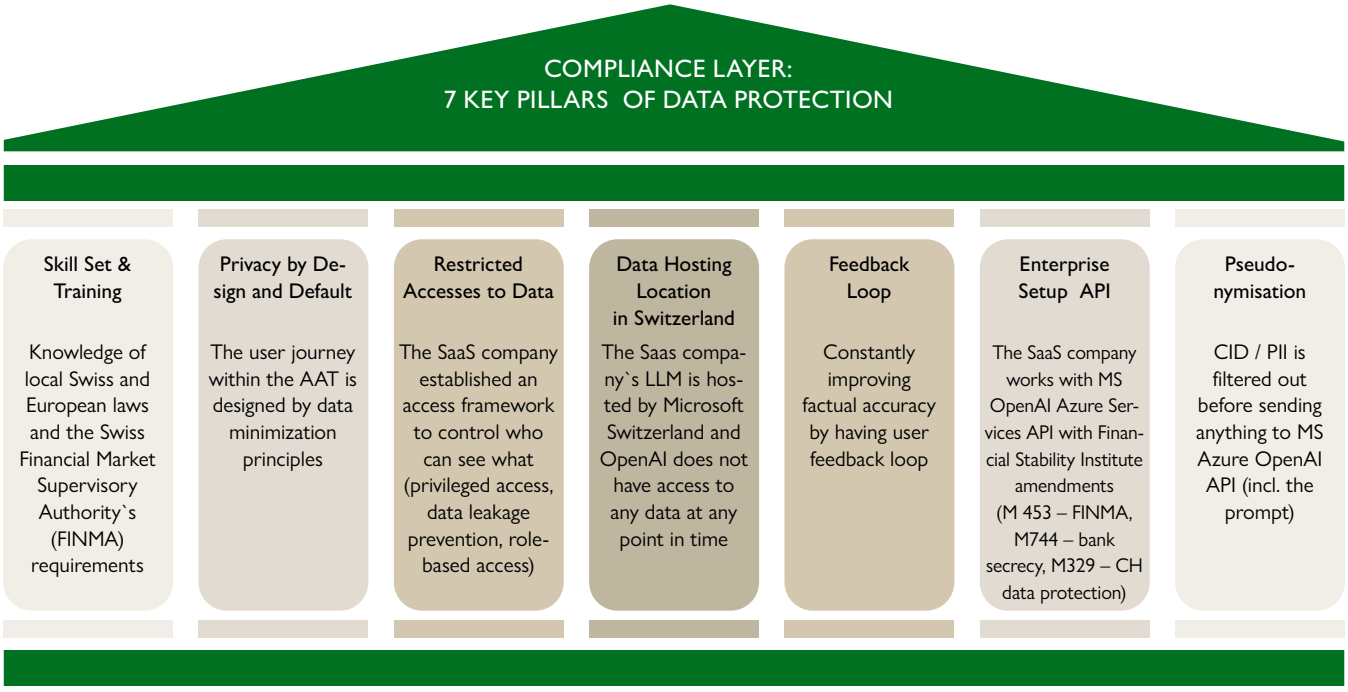


Source: Unique, internal document.

Management Summary

The integration of AATs using powerful generative AI presents a multitude of opportunities for companies. This article examines concrete use cases and identifies skills that will become more relevant in the future. It also sheds light on data security and compliance issues in this context. Three recommendations can be drawn from the findings: (1) The introduction of an AAT is a logical decision in customer service, as time savings and productivity gains are likely in numerous use cases. (2) 'Prompt Engineering' as a new skill is more hyped than a real challenge - focusing on analytical and creative skills is much more important. (3) Strategic time planning for compliance and data protection is important in the implementation phase.

Figure 2: Compliance Layer – 7 Key Pillars of AAT Data Protection



Source: Unique, internal document.

client data as well as adherence to the highest standards of privileged access, and enables rapid response to emerging threats.

Research Methodology

Dataset

In the examined 5664 chatlogs, the FLEs intuitively use prompts to communicate with the AAT chatbot. The 30 FLEs, on average 35 years old, are made up of 19 men and 11 women, and work in the contact center of the SaaS company under study, advising and selling the AAT while also utilizing the functionalities of the AAT themselves. They were not trained in prompt formulation prior to implementation. The prompts were collected for 2 weeks.

Study Design and Data Analysis

The analysis of the chatlogs was guided by the principles of grounded theory, as outlined by Corbin and Strauss (2008). Grounded theory is appropriate in this case as it allows the authors to explore the dataset without preconceived notions. The findings are complemented by insights gained from interviews with representatives of the SAAS company.

By examining the 5664 prompts presented to the AAT, the authors could determine the main use cases for which employees use the AAT. It was also possible to infer from the frequency of usage which use cases appear to be particularly helpful.

Furthermore, it could be demonstrated that 'prompt engineering' remains a subject that requires further research. Therefore, the prompts were examined to determine how the FLEs compose and write the prompts and which skills appear to be particularly important for this purpose. The focus of this 'skills investigation' was to examine the following three skills that are frequently mentioned in the literature on prompting: technical prompting expertise, hereafter referred to as 'craftsmanship', as well as creative and analytical thinking (Acar, 2023; Dang et al., 2022; Oppenlaender et al., 2023).

In the following, we will look at the specifics of how we systematically assessed craftsmanship, creative and analytical

Figure 3: Co-Occurences of Codes (# of code co-occurrences)

		Concept: Writing Style				
		Analytical Thinking #codes: 2455				
		Clarity and Conciseness #codes: 376	Personal Standardization #codes: 400	Personalization #codes: 68	Problem Resolution Efficiency #codes: 749	Revision #codes: 243
Concept: Use Cases	Next Steps #codes: 4468	55	124	146	227	78
	Detailed Meeting Summary #codes: 3960	132	173	221	288	55
	Email Configuration #codes: 1538	90	204	292	287	106
	Meeting Summary #codes: 1442	63	111	184	196	92
	Consent #codes: 519	0	0	2	2	1
	Goals Check #codes: 186	10	26	30	20	15
	Sentiment Analysis #codes: 57	7	0	26	15	14
	Transcript Snippet Extraction #codes: 48	17	0	1	18	0

Code Nomination (#codes): ☐ <100 Code Co-Occurences ▢ >100 Code Co-Occurences ■ >200 Code Co-Occurences

thinking during our analysis of the prompts and how we identified use cases within the prompts.

Creative Thinking: The literature review identified different methods scholars use to assess creativity in writing. In the case of chatlogs, the most compelling method is linguistic and syntactic analysis. Key features of creativity that scholars usually look for in this type of analysis are the following: a wide range of 'figures of speech', such as metaphors, adjectives, proverbs, etc. (Carter & McCarthy, 2004; D'Souza, 2021; Oppenlaender et al., 2023).
Analytical Thinking: This encompasses the central concept of actively using concise language and writing and revising prompts analytically. It emphasizes the importance of several key aspects, including personal standardization, personalization, and prompt revision, i.e., actively improving prompts to achieve better results (Oppenlaender et al., 2023).
Craftsmanship: In prompting, craftsmanship or 'prompt engineering' primarily refers to the skill of crafting instructions for large language models (LLMs), such as ChatGPT, to enforce rules and achieve specific qualities and quantities of generated output. A well-crafted prompt achieves three key objectives: (1) it establishes the context for the conversation, (2) it communicates to the LLM what information is relevant and significant, and (3) it specifies the desired form and content of the output (White et al., 2023).
Use Cases: Use cases can be extracted from the prompt's command as they always inherently contain the specific use case itself. For instance, when a prompt instructs the AAT to ‹write a follow-up email,› the implied use case is ‹email configuration› as it is inherently embedded within the prompt›s context.

Data Exploration

Step 1: During the 1st order coding step, 20 codes are generated inductively by microanalyzing the chatlogs line by line (see figure 3).
Step 2: Instantly, two concepts emerge: 'use cases' and 'writing style' (see the headings in figure 3).
Step 3: While the use cases can be identified directly, the writing styles will be examined in more detail in the following, with a focus on the three skills of craftsmanship, creative thinking, and analytical thinking. This step will determine whether the codes used to describe the writing styles can be subsumed under these three skills and how they are employed.

Concept: Writing Style			
Craftsmanship #codes: 570	Creative Thinking #codes: 751		
Technical Prompting-Proficiency #codes: 570	Descriptive Language #codes: 462	Metaphors #codes: 33	Storytelling Elements #codes: 256
447	116	7	10
473	207	20	104
60	168	17	75
4	131	12	46
0	2	0	0
3	29	7	21
0	24	1	17
0	1	1	1

Source: Authors' illustration.

Main Propositions

1. There is a consensus that the use of AATs in customer service has a transformative character.
2. Productivity and quality of the work of FLEs can be significantly increased in many cases, especially in complex and time-intensive ones.
3. The connection of AATs to the ChatGPT-3.5 Turbo API is not trivial from a data protection and security point of view, but with the right experts at hand and a bit of planned time, it is definitely possible.
4. With the rapid progress of AATs, the need for professional prompt engineering will likely decrease.

Data Exploration: Results from Steps 1 and 2

Firstly, there is a clear objective included in the prompts provided, which is the inherited use case. For example, the writers want to force the bot to configure an email. Secondly, the codes characterize the writing style. This involves aspects such as the utilization of creative vocabulary, metaphors, or personal standardizations (see figure 3).

Data Exploration: Results from Step 3

The first concept ('use cases') represents the use case of the prompt, from which eight major use cases emerge. Three main use cases stand out, as FLEs primarily utilize the AAT for (1) next steps, (2) detailed meeting summaries, and (3) email configurations (see figure 3).

The second concept ('writing style') inherits the techniques demonstrated in crafting the prompts. The codes describing the writing style techniques can be readily associated with the three skills: creative thinking, analytical thinking, and craftsmanship (see figure 3).

Creative thinking: The codes encompass key features of creative writing, namely descriptive language (adjectives, adverbs, etc.), metaphors, and storytelling elements.
Analytical thinking: The codes include clarity and conciseness, personalization, personal standardization, problem-solving efficiency, revision, and length.
Craftsmanship: The code 'technical prompting proficiency' includes only prompts that specify (1) the context, (2) the relevant information, and (3) the desired output.

In the following section of step 3, we will take a closer look at how the techniques that show creativity, analytical thinking, and craftsmanship are used.

Creative Thinking in Prompts

The analysis reveals that writers employ different aspects of creativity for different use cases. After a thorough analysis of the corresponding lines to gain more insights into the utilization of the above-mentioned techniques, the creative techniques are ranked on a scale from 1 (indicating that the skill is required to the highest degree) to 3 (indicating that the skill is required to the least degree):

(1) **Descriptive language:** Based on the dataset, it is evident that the writers prioritize the use of descriptive language as the most important creative technique. It is particularly used in more complex prompts, in order to personalize the content and to provide contextual information. This enables the writers to incorporate subtle nuances and to provide a more precise description of the desired output.
(2) **Storytelling Elements:** It is evident from the data that storytelling elements are frequently used to provide context to the requests or to have the answers presented within a specific narrative framework.
(3) **Metaphors:** Although used to some extent, metaphors and figures of speech are not as prevalent.

Creative Thinking – Prompt Example

Prompt: Your task is to detect from the conversation so-called "magic moments". The criteria of a magic moment are: (1) Alex or Michael explain a topic in a way that leads to a positive reaction from the client.
(2) The participants share a funny moment, and they laugh and have fun during the conversation. As an answer, provide a summary of the topics discussed and add a snippet from the transcript. Keep the answer as short as possible. Write in German.

Analysis:
Descriptive Language
Metaphors
Story Telling Elements: The text sets up a task and criteria for identifying "magic moments" in a conversation, creating a narrative structure for the task.

Analytical Thinking in Prompts

For analytical thinking, the authors also performed a thorough analysis of the corresponding lines to get more insights into the utilization of the corresponding analytical techniques. The next step uses the same inverted rating scale as above:

(1) **Problem-solving efficiency:** The writers exhibit efficient problem-solving techniques in various prompts. They prioritize quick and effective solutions, aiming to minimize unnecessary back-and-forth communication.
(2) **Length:** By using the most efficient length of prompts (which may be longer or shorter depending on the specific task at hand) the FLEs greatly increase their prompt efficiency and prevent delays in achieving the desired goal.
(3) **Personalization:** A high number of prompts were personalized, with detailed commands to elicit richer and more appropriate answers instead of using standardized prompts.

(4) **Personal standardization:** Many FLEs develop some kind of standardization in their prompts, reusing those that work effectively.
(5) **Clarity and conciseness:** The writers place a high priority on conveying information with clarity and conciseness. They skillfully construct prompts that are easily comprehensible and free of ambiguity.

Analytical Thinking – Prompt Example

Prompt: Assume that the customer is more satisfied when (a) They receive an appropriate solution to their problem directly during the conversation, (b) They are not suggested another conversation, (c) Their questions are answered accurately by the advisor.
Based on these criteria, rate the customer›s satisfaction on a scale of 1 (very dissatisfied), 2 (dissatisfied), 3 (neutral), 4 (satisfied), 5 (very satisfied). Provide reasons why the customer might be dissatisfied.

Analysis:

Problem Resolution Efficiency: The prompt effectively conveys the importance of problem resolution efficiency by specifying that customers are more satisfied when they receive an appropriate solution directly during the conversation.

Length: The length of the prompt is appropriate for its purpose. It conveys the necessary information without unnecessary elaboration.

Personalization: The prompt was personalized to the specific context of this call instead of simply asking for the sentiment of the call.

Personal Standardization: This prompt was revised several times by the FLE until it worked and then the FLE used it as a standardized prompt for similar calls.

Clarity and Conciseness: The prompt is written in a clear and concise manner. It directly communicates the criteria for customer satisfaction and the rating scale.

Craftsmanship in Prompts

The analysis of the co-occurrence of the code belonging to the 'craftsmanship' theme reveals that writers used craftsmanship only in some cases. In particular, commands to generate detailed meeting summaries, next steps, and emails seem to intuitively trigger FLEs to write in a technically proficient way, including in their prompts (1) the context, (2) the relevant information, and (3) the desired output. However, when compared to the frequency with which creative and analytical skills were employed, craftsmanship was not as naturally prevalent and none of the FLEs consistently incorporated it into their writing style. It appears that a focus on craftsmanship does not necessarily increase the effectiveness of the prompts.

Craftsmanship – Prompt Example

Prompt: You are a salesperson working for a SaaS company. The following transcript is a snippet from a conversation you had with the client. From the perspective of the internals and based on the transcript above, create a follow up email. The email should be polite and professional. The email should summarise the transcript, list any action items that were discussed, and list the mentioned next steps.

Analysis:

The context
The relevant information
The desired output

Discussion

Regarding our first research question, the analysis identified the prominent use cases of the AATs chat function, showing that it was most frequently used for (1) generating next steps, followed by (2) creating detailed meeting summaries, and (3) configuring emails. The conversation with the SaaS employee revealed the significant value placed on the use cases, specifically their ability to save an average of one hour per FLE per day. Furthermore, employees are using the chat function to explore sentiment analysis, although not primarily.

In summary, the AAT›s chat function is most frequently utilized for practical tasks related to meeting management and data handling, demonstrating its usefulness in enhancing efficiency and ensuring data accuracy. This conclusion suggests that the chat function has the potential to play a vital role in streamlining the workflows of FLEs and enhancing productivity. This leads to recommendation one: 'The introduction of an AAT is a logical choice within the context of customer service.'

In response to the second research question, the authors investigated and compared the utilization of creative, analytical, and craftsmanship skills in writing prompts and concluded that analytical skills are most important for successful prompt writing, followed by creative abilities. Craftsmanship skills, which reflect 'prompt engineering' capabilities, appear to be less essential, given their limited application by the FLEs in using the tool effectively.

Within the analysis, it is clear that the majority of writers display a remarkable consistency, clarity, and a straightforward approach in their overall style. They give concise instructions or pose precise questions, indicating a high level of analytical

thinking throughout. The language used is direct, instructive, and focused on conveying the essential information relevant to the task at hand, ultimately leading to acceptable results.

While the utilization of analytical skills outweighs the immediate need for creative skills, some creativity in prompt writing is still deemed important. This requirement varies depending on the purpose and desired outcomes. It is clear that a proficient prompt writer with creative abilities has the potential to transcend conventional thinking, ultimately producing more profound, personalized, and enriched results.

> Managers should opt for developing analytical thinking and creativity in their teams rather than 'prompt engineering'.

Based on the data, however, employing craftsmanship/prompt engineering was not significantly important to the FLEs. These findings appear to support the views of researchers who have previously expressed skepticism about the hype surrounding 'prompt engineering' as the most critical skill for the near future. Writing in the Harvard Business Review, Ogus Acar (2023), for example, suggests that the ability to formulate problems efficiently and straightforwardly will outweigh the need for a scientifically precise approach to prompt writing. This seems to match the observations made in the dataset presented in this paper, which leads to recommendation two: 'Prompt engineering as a future skill is more hype than reality.'

In response to the third research question, the authors identified in the case study a compliance framework (see figure 2) that is closely aligned with European and Swiss data security compliance guidelines. However, during the interview with the Chief Data Officer it became evident that, from a data protection perspective, the implementation of the AAT and the integration of the compliance layer require significant customization, setup time, and individual configuration due to the varying complexity of each client's data infrastructure. Consequently, the concept of a 'one-size-fits-all' solution in this domain proves elusive. As a result, the decision to implement a tool such as AAT is intricately linked to the specific circumstances and existing infrastructure of each organization. This leads to recommendation three: 'Strategic time allocation for compliance and data protection is key when implementing AATs.'

Lessons Learned

1. In the context of customer service, implementing an ATT is a logical choice.
2. Managers should opt for developing analytical thinking and creativity in their teams rather than 'prompt engineering'.
3. Strategic time allocation for compliance and data protection issues is key when implementing AATs.
4. There is no one-size-fits-all solution, and a thorough assessment of the existing infrastructure is essential before implementation.

Conclusion, Limitations and Further Research

In conclusion, this study underscores the significant increase in customer service productivity achievable through the introduction of an AAT powered by the GPT-3.5 Turbo API. It also emphasizes the importance of training employees in analytical thinking and creative skills, while prompt engineering is considered less critical for FLEs. Additionally, the study provides insights into how the implementation of an AAT can be aligned with European and Swiss data security standards, showing that this is certainly feasible, although a one-size-fits-all solution is not viable.This study examines the case of an implemented AAT within a specific context, which limits the generalizability of the findings and recommendations. Further investigations, such as examining the click rates within the tool, conducting user interviews, observing usage patterns, and various other potential investigations that could have substantiated and reinforced the assertions in this article, were deliberately omitted to maintain the scope of this paper.

Therefore, this paper is an insight into a real-world example of AAT tool implementation rather than foundational research. Exploring various comparable tools from different companies in real-life scenarios is an exciting research avenue that could contribute to a deeper understanding of the possibilities of generative AI, the potential for time and cost savings, as well as the associated challenges. In future studies, it is imperative to expand investigations to include the aforementioned aspects, such as conducting in-depth interviews with key users.

References

Acar, O. A. (2023, June 6). AI prompt engineering isn't the future. Harvard Business Review. https://hbr.org/2023/06/ai-prompt-engineering-isnt-the-future

Akter, S., Hossain, M. A., Sajib, S., Sultana, S., Rahman, M., Vrontis, D., & McCarthy, G. (2023). A framework for AI-powered service innovation capability: Review and agenda for future research. Technovation, 125. https://doi.org/10.1016/J.TECHNOVATION.2023.102768

Boden, C., Fischer, J., Herbig, K., & Spierling, U. (2006). Citizentalk: Application of chatbot infotainment to e-democracy. In S. Göbel, R. Malkewitz, & I. Lurgel (Eds.), Technologies for interactive digital storytelling and entertainment: Third international conference, TIDSE 2006, Darmstadt, Germany, December 4-6, 2006. Proceedings (pp. 370–381). Springer. http://dx.doi.org/10.1007/11944577_37

Bouazzati, T. (2023, February 28). How ChatGPT can revolutionize contact center operations. LinkedIn. https://www.linkedin.com/pulse/how-chatgpt-can-revolutionize-contact-center-tarig-bouazzati/

Brandl, R., & Ellis, C. (2023, August 31). ChatGPT statistics 2023: All the latest statistics about OpenAI's chatbot. Tooltester Blog. https://bit.ly/3ZFtPJy

Carter, R., & McCarthy, M. (2004). Talking, creating: Interactional language, creativity, and context. Applied Linguistics, 25(1), 62–88. https://doi.org/10.1093/APPLIN/25.1.62

Chui, M., Hazan, E., Roberts, R., Singla, A., Smaje, K., Sukharevsky, A., Yee, L., & Zemmel, R. (2023, June 14). The economic potential of generative AI: The next productivity frontier. McKinsey & Company. https://mck.co/3thhKOT

Corbin, J., & Strauss, A. (2008). Basics of qualitative research: Techniques and procedures for developing grounded theory (3rd ed.). SAGE Publications, Inc. https://doi.org/10.4135/9781452230153

Dang, H., Mecke, L., Lehmann, F., Goller, S., & Buschek, D. (2022, September 3). How to prompt? Opportunities and challenges of zero- and few-shot learning for human-AI interaction in creative applications of generative models. ArXiv Preprint. https://doi.org/10.48550/arXiv.2209.01390

De Keyser, A., Köcher, S., Alkire, L., Verbeeck, C., & Kandampully, J. (2019). Frontline service technology infusion: Conceptual archetypes and future research directions. Journal of Service Management, 30(1), 156–183. https://doi.org/10.1108/JOSM-03-2018-0082

Decker, M., Fischer, M., & Ott, I. (2017). Service robotics and human labor: A first technology assessment of substitution and cooperation. Robotics and Autonomous Systems, 87, 348–354. https://doi.org/10.1016/j.robot.2016.09.017

Dell'Acqua, F., McFowland, E., Mollick, E. R., Lifshitz-Assaf, H., Kellogg, K., Rajendran, S., Krayer, 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. Harvard Business School Technology & Operations Mgt. Unit (Working Paper No. 24-013). https://doi.org/10.2139/SSRN.4573321

Demir, M., Şirvan, &, & Demir, Ş. (2023). Is ChatGPT the right technology for service individualization and value co-creation? Evidence from the travel industry. Journal of Travel & Tourism Marketing, 40(5), 383–398. https://doi.org/10.1080/10548408.2023.2255884

Di Battista, A., Grayling, S., Hasselaar, E., Leopold, T., Li, R., Rayner, M., & Zahidi, S. (2023, May). Future of Jobs Report 2023. World Economic Forum. https://www.weforum.org/reports/the-future-of- jobs-report-2023/

D'Souza, R. (2021). What characterises creativity in narrative writing, and how do we assess it? Research findings from a systematic literature search. Thinking Skills and Creativity, 42. https://doi.org/10.1016/J.TSC.2021.100949

Dwivedi, Y. K., Hughes, L., Kshetri, N., Slade, E. L., Jeyaraj, A., Kar, A. K., Baabdullah, A. M., Koohang, A., Raghavan, V., Ahuja, M., Albanna, H., Albashrawi, M. A., Al-Busaidi, A. S., Balakrishnan, J., Barlette, Y., Basu, S., Bose, I., Brooks, L., Buhalis, D., … Wright, R. (2023). "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. International Journal of Information Management, 71. https://doi.org/10.1016/J.IJINFOMGT.2023.102642

Eloundou, T., Manning, S., Mishkin, P., & Rock, D. (2023, March 17). GPTs are GPTs: An early look at the labor market impact potential of arge language models. ArXiv Preprint. https://doi.org/10.48550/arXiv.2303.10130

Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation? Technological Forecasting and Social Change, 114, 254–280. https://doi.org/10.1016/j.techfore.2016.08.019

Huang, M. H., & Rust, R. T. (2018). Artificial intelligence in service. Journal of Service Research, 21(2), 155–172. https://doi.org/10.1177/1094670517752459

Huang, M. H., & Rust, R. T. (2020). Engaged to a robot? The role of AI in service. Journal of Service Research, 24(1), 30–41. https://doi.org/10.1177/1094670520902266

Jain, T. (2023, May 18). 10 ChatGPT best practices in call centers 2023. Enthu.Ai/Blog. https://bit.ly/46Cz4fg

Koc, E., Hatipoglu, S., Kivrak, O., Celik, C., & Koc, K. (2023). Houston, we have a problem! The use of ChatGPT in responding to customer complaints. Technology in Society, 74. https://doi.org/10.1016/J.TECHSOC.2023.102333

Lambert, J., & Stevens, M. (2023). ChatGPT and generative AI technology: A mixed bag of concerns and new opportunities. Computers in the Schools, 1–25. https://doi.org/10.1080/07380569.2023.2256710

Larivière, B., Bowen, D., Andreassen, T. W., Kunz, W., Sirianni, N. J., Voss, C., Wünderlich, N. V., & De Keyser, A. (2017). "Service encounter 2.0": An investigation into the roles of technology, employees and customers. Journal of Business Research, 79, 238–246. https://doi.org/10.1016/j.jbusres.2017.03.008

Lim, W. M., Kumar, S., Verma, S., & Chaturvedi, R. (2022). Alexa, what do we know about conversational commerce? Insights from a systematic literature review. Psychology & Marketing, 39(6), 1129–1155. https://doi.org/10.1002/MAR.21654

Liu, V., & Chilton, L. B. (2022, April 29). Design guidelines for prompt engineering text-to-image generative models. Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems, 1–23. https://doi.org/10.1145/3491102.3501825

Marr, B. (2022, December 28). What does ChatGPT really mean for businesses? Forbes Magazin. https://bit.ly/3tpjrtm

Murphy, T. (2023, April 27). How to use ChatGPT for customer service. Techtarget/Blog. https://bit.ly/3PCnpGC

Oppenlaender, J., Linder, R., & Silvennoinen, J. (2023, March 13). Prompting AI art: An investigation into the creative skill of prompt engineering. ArXiv Preprint. https://doi.org/10.48550/arXiv.2303.13534

Reynolds, L., Ai, M., Ai, K., & Mcdonell, K. (2021, May). Prompt programming for large language models: Beyond the few-shot paradigm. In Y. Kitamura, A. Quigley, K. Isbister, & T. Igarashi (Eds.), CHI EA '21: Extended abstracts of the 2021 CHI conference on human factors in computing systems, 1–7. https://doi.org/10.1145/3411763.3451760

Smith, C. S. (2023, April 5). Mom, dad, I want to be a prompt engineer. Forbes Magazin. https://bit.ly/46BK3py

Subagja, A. D., Ausat, A. M. A., Sari, A. R., Wanof, M. I., & Suherlan, S. (2023). Improving customer service quality in MSMEs through the use of ChatGPT. Journal Minfo Polgan, 12(1), 380–386. https://doi.org/10.33395/JMP.V12I1.12407

Varanasi, L. (2023, June 25). AI models like ChatGPT and GPT-4 are acing everything from the bar exam to AP biology. Business Insider. https://bit.ly/3rGYdqv

White, J., Fu, Q., Hays, S., Sandborn, M., Olea, C., Gilbert, H., Elnashar, A., Spencer-Smith, J., & Schmidt, D. C. (2023, February 21). A prompt pattern catalog to enhance prompt engineering with ChatGPT. ArXiv Preprint. https://doi.org/10.48550/arXiv.2302.11382

Wirtz, J., Patterson, P. G., Kunz, W. H., Gruber, T., Lu, V. N., Paluch, S., & Martins, A. (2018). Brave new world: Service robots in the frontline. Journal of Service Management, 29(5), 907–931. https://doi.org/10.1108/JOSM-04-2018-0119