Analysis of the Application of Generative AI in Business Management

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Abstract. In the era of big data, many companies have already implemented RPA and AI as supporting tools for business management, which can effectively reduce the duplication of work by management and finance-related personnel, allowing them to devote more energy to high value-added work content. Since last year, generative AI, represented by ChatGPT and AI painting, has gradually come into the public’s view, and even though it still has some shortcomings at this stage, its ability to “think” and “create” is different from traditional AI tools, and users are amazed. Users are amazed. The process of business management also needs to be creative and logical, and the emergence of generative AI is certainly a good fit for this need. In this paper, we will briefly discuss the future application of generative AI in business management and the issues that managers still need to address in order to fully utilize the capabilities of generative AI.

Keywords: Generative AI, business management, smart finance.

1. Introduction

Since the end of 2021, there has been a sudden surge in the creation of AI art content on the internet. Only a few months passed between the time the Stable Diffusion algorithm stepped into the public eye and the time when ordinary home users were able to get a shallow taste of the magic of AI painting. The last time AI technology made an impression was when Google's AlphaGo AI algorithm defeated human Go champion Lee Sedol. But for the majority of the masses, such AI technology was limited to being awe-inspiring, just one show-off after another, and seemed out of reach when it came to commercialization and everyday applications.

In early December 2022, OpenAI, a company invested by Microsoft, relaunched its ChatGPT service, which differs significantly from what the masses traditionally think of as AI. In the past, AI technologies were often applied to pattern recognition, autonomous driving, knowledge engineering and other applications, commonly in the areas of pattern recognition, autonomous driving, machine translation and other applications. ChatGPT, as a generative AI, is aimed at a wider range of applications and can be used in much the same way as a regular chatbot, but unlike a regular chatbot, ChatGPT seems to have the ability to ‘think’, showing us that today's AI technology has a degree of This shows us that today's AI technology has a degree of creativity that goes beyond the process of searching, filtering and responding. Generative AI has already demonstrated its appeal in a wide range of industries, not only in terms of commercial success, but also in the management of business operations, where it can be of great help.

2. Brief Overview of Generative AI

Artificial Intelligence, abbreviated as AI, is a branch of computer science that is part of a new technical science that studies and develops theories, methods, techniques and applied systems for simulating and extending human intelligence. The term was first coined at the DARTMOUTH Society in 1956, hence the year 1956 is also known as the first year of artificial intelligence. In the 67 years since then, the process and pace of development of AI technology has been slower than mankind would have expected.
Generative AI is an AI system that can generate text, images or other media in response to prompts. Generative AI systems use generative models, such as large language models, to statistically sample new data based on the training data set used to create them.

Notable generative AI includes ChatGPT, a chatbot built by OpenAI using the GPT-3 and GPT-4 large language models, and Bard, a chatbot built by Google using the LaMDA model. Other generative AI includes AI image generation systems such as Stable Diffusion and DALL-E.

Generative AI currently has potential applications in a wide range of industries, including software development, marketing and fashion. Since the early 2020s, major companies have seen a surge in investment in generative AI, with large companies such as Microsoft, Google and Baidu, as well as numerous smaller companies, developing generative AI models.

![The Generative AI Application Landscape](image)

Fig. 1 The generative AI application landscape (from SEQUOIA)

Generative AI has a distinctive feature in that it is built by applying unsupervised or self-supervised machine learning to data sets. The capabilities of a generative AI system depend on the pattern or type of dataset used. Those that are currently appearing frequently in the public domain are text, code and images. The text class, i.e. generative AI systems trained on text or word tags, are capable of natural language processing, machine translation and natural language generation and can be used as a base model for other tasks; the code class is based on the text class and trains computer programming languages to be able to generate source code for new computer programs; and the image class is trained on image sets with textual descriptions Generative AI systems, such as DALL-E, Stable Diffusion and Midjourney. It is foreseeable that in future applications of generative AI, systems should not be limited to text-only or image-only, i.e. generative AI can be multimodal and can be built from multiple generative models, or one model trained on multiple types of data.
3. Current State of AI Applications in Business Management

To date, AI technology has come to the fore in the application of business management. In contrast to generative AI, most intelligent finance currently uses software robots and AI-based business process automation technology, known as Robotic Process Automation (RPA), which provides a cost- and effort-saving way to automate end-user manual processes by mimicking the way they operate manually at the computer. Essentially, RPA is a list of action processes designed by programmers to automate processing tasks, and the specified tasks are repeated automatically through APIs (Application Programming Interfaces) or dedicated scripts provided by financial management software, reducing the barriers to product automation.

![Fig. 2 The Generative AI timeline](image)

For business management, existing RPA can already greatly improve the efficiency of the execution of the daily work of the staff involved, and can be embedded in higher level decision making solutions and data collection and analysis processes. However, RPA does not strictly speaking have AI characteristics, its main purpose is to liberate the workforce from the monotonous, repetitive and tedious repetitive tasks, which are limited to a set of processes or logic set by the programmer or user to complete the corresponding action, which itself does not require "thinking". If there are any scenarios where the RPA performs an automated task process that deviates significantly from the pre-defined values, the final task will be much less executable and accurate. For this reason, a large number of RPA intelligent finance applications integrate AI-assisted operations that are not generative, but rather pattern recognition AI tools such as image recognition conversion, text recognition, unstructured text extraction, etc. These tools help RPA processes to recognize financial statements, contracts, documents, etc., adding "eyes" and "ears" to the RPA workflow, "eyes" and "ears" to the RPA workflow.

The "RPA+AI" model alone can help companies save on labor costs and improve the accuracy of accounting, allowing staff to focus on high value-added operations. Practical application scenarios include VAT invoice management and tax returns, invoicing, transaction carry-over and stock-taking, etc. RPA is highly adaptable and accurate for this type of work, avoiding the inevitable errors that can be caused by repetitive work over time.

4. Significance of Generative AI for Business Management Applications

4.1 Creative Assistant for Management Decisions

As mentioned above, the natural language processing and generation capabilities of a range of generative AI, represented by ChatGPT, set it apart from other AI tools. It is more 'thinking' than basic customer service chatbots, and some securities firms are even using automated trading bots
that rely on machine learning to handle some of their lower-risk business, with significant improvements in business processing efficiency. Generative AI can be expected to provide decision makers with short-term future market forecasts and project recommendations in the future by transforming predictive models through machine learning of market data.

Any entrepreneur has had the experience of trying to brainstorm compelling new business ideas. As opposed to trusting AI tools to generate these ideas without any human assistance, generative AI only serves to work in tandem with your project team. Managers still need to review each idea to determine if there is a relevant target market and also to determine the significance of its creation.

Nevertheless, when considering the fact that most start-ups are struggling to find funding to kick-start their early operations, it makes sense to have a creative tool at the ready. It can help you in the process of setting up a new startup, writing a draft of a job ad, a reference for a grant funding proposal, or even finding a potential venture capital studio partner. Of course, generative AI tools still only provide help and reference advice for managers, and decision-makers need to verify their effectiveness themselves, but this model will undoubtedly bring more inspiration and value to emerging businesses.

4.2 Protecting Customer Privacy and Security

Data security and privacy are essential to protect personally identifiable information from misuse or unauthorized access. In the era of Big Data, businesses are increasingly collecting personal data about their customers, so it is essential to protect this data to avoid breaches of customer privacy and corporate confidentiality. Businesses use representative data about their customers to develop their goods and provide services, but this approach can come at the expense of customer privacy. This problem can be solved by generative AI tools such as Mostly.ai and Tonic.ai that can generate synthetic data from actual data, protecting user privacy while maintaining the authenticity of the data, for testing and refining an organization’s machine learning models and product data testing, greatly reducing the risk of privacy breaches to the organization.

4.3 Optimize the After-sales Service System

The emergence of generative AI will bring a revolution in customer after-sales service. It is very difficult for companies to provide sufficient after-sales service resources and staffing for each customer, and it is also difficult for customer service staff to know the information and needs of each customer in advance, which conflicts with the concept of providing excellent customer support to cultivate customer loyalty. The shortage of after-sales staff brings about a series of problems such as long problem solving time and poor service quality, which will lead to customer anger and loss of potential customers.

In terms of arithmetic power and memory, generative AI is far superior to human labor, and in customer after-sales service scenarios, the natural language communication ability of generative AI has a significant advantage over traditional trigger AI in communicating with customers.

Generative AI can learn components (elements) of artifacts from customer data through various machine learning methods to generate new, completely original, authentic artifacts (in this case, responses to customers) that are personalized based on the training data rather than simply replicated. Once a company has a large enough sample of group and individual customer data, the generative AI customer can predict the problems the customer will ask based on the existing customer model, and provide actual solutions to the problems that have been asked, rather than simply "We have received your problem and will report it."

4.4 Assist in Improving Sales Efficiency

Product-led growth is becoming more and more common today, but sales still tends to be more of a personal issue. Salespeople, especially those selling high-value items, need to understand key customers and provide customized answers. Triggering scripted sales responses and templates for
sales promotions can save salespeople effort and speed up the process, but they can feel like a compromise between quantity and quality.

With generative AI, salespeople can truly balance the two, creating quality sales channels that link customers and getting the most out of quantity and quality. Use generative AI to analyze data and identify patterns in consumer behavior faster and more accurately than humans in the sales funnel. Chatbots, advertising platforms and data collection systems that are connected to generative AI can all generate personalized content based on customer data in the CRM, further helping to automate sales pursuits. For non-uniform price item sales and service offerings, generative AI can determine the ideal discount and the right time to complete a transaction based on win-lose rates and transaction paths.

4.5 Embellish Corporate Marketing Programs

Marketing is one of the most critical aspects of a business. After all, if consumers don't know about a company's products or work services, there is little chance they will use them. However, marketing is not limited to advertising; it is also about messaging, positioning, brand storytelling, and, most importantly, building practice with potential customers. With generative AI, marketing copy and job descriptions can be generated at a low cost, providing consumers with zero-wait-time conversational messaging support, endless variations in marketing copy, and follow-up tracking of consumer sentiment.

5. Problems in the Application of Generative AI in Business Management

5.1 Model privacy security needs to be improved

First, the lack of model privacy and security is not in conflict with the customer privacy and security benefits that generative AI brings above. Model privacy security is an issue that companies need to consider and strictly control when conducting machine learning and large-scale data processing before generative AI is put into use. The customer privacy security advantage is that generative AI can use the existing models to obscure customer privacy data after it already has the models.

Generative AI is mainly through recursive generative models and generative adversarial networks, based on deep neural networks, by training large-scale data sets, learning to abstract the essential laws and probability distribution of data, and finally using generative models to generate new data. Before generative AI is put into practical application, enterprises need to train large-scale enterprise internal data, and how to protect the private data of enterprises in the process of training data is an important issue to be considered when using generative AI to assist enterprise management.

5.2 Stronger data source dependency

The core hardware of generative AI is driven by logic, but the humans who build and train the machines are not. Subjective human biases and errors have been shown to make their way into AI models. Driven by certain corporate regulatory needs or personal reasons, someone may use biased market or corporate data to create a model, and these will cause the generative AI to output responses with the same bias and amplify errors. How to select and make sure that the training source data of generative AI used by the enterprise is objective and accurate is the preparation work that business managers should do before choosing generative AI to assist in business management.

5.3 Accuracy still lacking

Generative AIs still think differently than humans by nature, and even though they are now capable of performing many of the repetitive tasks and transactions within an enterprise, they are
still not immune to errors. Just as generative AIs provide ideas for start-ups, managers cannot trust them as a reference for their own brainstorming and as a trigger for inspiration.

Generative AI uses existing data and past market trends to predict the financial data that managers need as a reference for a certain period of time. Lacking sufficient training, generative AI is unable to identify major errors or large deviations in the source data, both of which can lead to a decrease in the accuracy of generative AI's predictions, and better algorithms are still needed to improve these problems.

5.4 Still has certain requirements for users

Even though generative AI can already exist as an enterprise "think tank" to provide reference suggestions and solutions for some daily use scenarios for enterprise managers, unlike humans, generative AI does not realize that it is "lying". Even ChatGPT, which has a very high degree of completion, may still give incorrect or plausible responses in the process of use, and people who do not have relevant professional knowledge may easily believe in such information and cause subsequent losses. Therefore, users cannot fully rely on generative AI at this stage, and there is still a need for users' own common sense and knowledge base to make good use of such tools.

References