Artificial Intelligence in CRM Education

Milena Janáková[1]

Abstract: Artificial intelligence (AI) is an applied information technology with the potential to transform processes in various fields and sectors. The highest expectations are associated with administrative support, engineering, management and marketing, computers, healthcare, and education institutions and libraries, which also find their place in this transformation. AI-driven automation will affect public tasks such as data entry, meetings and presentations, or document management. Good examples may be observed in CRM systems, where AI generates content and personalized emails, creates predictive analytics to gain insights into customer behavior, and provides support for natural language processing. in the context of education, AI technologies open up opportunities for critical thinking rather than repetition in navigating applications like CRM systems. There is more room for real-time feedback to engage students effectively, leading to a better learning experience. This article presents experiences from courses that focus on analytic thinking about customer relationship management. ChatGPT is used to illustrate the variability in the description of necessary terms and processes. Active work involves not just passively receiving content but it is about thinking for the right expression, exploring innovative possibilities, and subsequently testing in selected CRM systems. For example, this evaluation is in the form of a classic SWOT analysis, or it is more flexible, involving the identification of both positive and less positive experiences and the knowledge required to solve the assigned tasks.

Keywords: artificial intelligence, education, customer relationship management (CRM)
JEL Classification: C80, D70, D80

1 Introduction

Artificial intelligence (AI) brings many benefits to education. One of the main advantages is the personalization of the learning content. Students have the opportunity to learn at their own pace and according to their individual needs. AI provides research and students learn to be more objective, to perceive concepts in wider contexts, which increases the quality of teaching and more precisely identifies areas in which students need help. Additional benefits are visible in exploring and interpreting selected terms and concepts in class with students. One of the main ways AI can help is by analyzing text and available resources. For example, it can be used to automatically search for key terms in education materials and provide definitions and explanations that help students better understand the topic being covered. It is also possible to identify connections between different interpretations and present students with relevant examples and applications, which increases the depth of their understanding.

Applications such as DeepL and ChatGPT are well-known AI-powered tools that have found valuable use in various fields, including education. DeepL (DeepL, 2023) is a machine translation service that uses advanced neural models to provide high accuracy and natural sounding translations. DeepL helps understand and translate texts from different languages, making foreign language learning more accessible and effective. The machine translation capabilities in DeepL expand the global dimension of education and facilitate cross-cultural communication and collaboration. ChatGPT (ChatGPT, 2023), like the AI model, is a versatile language model that can be used in various areas of education. It can act as a virtual tutor or assistant, answering students' questions on a wide range of topics, providing explanations and helping with homework. ChatGPT can also generate educational content such as essays, reports or summaries to help with writing assignments and research projects. In addition, it can adapt to the level and pace of learning, offering personalized learning experiences. In this way, ChatGPT contributes to the development of AI-based education that supports both students and educators in their academic endeavors.

Other solution brings AI language models that are integrated into many applications. Popular are applications like Google Assistant, or IBM Watson. Other application are like Siri (Apple), or Alexa (Amazon); they focus on voice-controlled assistant solution. AI also has an important place in applications such as CRM systems. Good example is Salesforce Einstein (Salesforce), Microsoft Dynamics 365, HubSpot CRM, or Zoho CRM. Google Assistant (Google Assistant, 2023) uses AI and natural language processing to provide voice-activated assistance and answer questions. IBM Watson (IBM Watson, 2023) is an AI platform by IBM that offers chatbot capabilities, language understanding, and

---

[1] Silesian University in Opava/School of Business Administration in Karvina, Department of Informatics and Mathematics, Univerzitni nam. 1934/3, 733 40 Karvina, Czech Republic, mija@opf.slu.cz.

data analysis for businesses and industries. Siri (Siri, 2023) is Apple's virtual assistant uses AI to understand and respond to voice commands, providing assistance with various tasks. Alexa (Amazon - Alexa, 2023) is voice-controlled assistant, used in Echo devices, relies on AI for natural language processing and smart home control. Salesforce Einstein (Salesforce Artificial Intelligence, 2023) is an AI platform that integrates into customer relationship management (CRM) to improve sales and service. Microsoft Dynamics 365 (Lamanna, 2023) uses artificial intelligence to analyze data, predict customer behavior, and automate business processes. HubSpot CRM (What's New in HubSpot AI, 2023) offers artificial intelligence features for content personalization, marketing automation, and campaign management. Zoho CRM (Work Smarter with Zia, 2023) uses artificial intelligence to analyze customer data, predict sales and automate marketing campaigns. These applications and services highlight the broad range of AI technologies applied in everyday products and across different solutions (AI marketing tools software, 2023; AI sales assistant software, 2023; AI writing assistant software, 2023; Artificial intelligence software, 2023).

At a public level, CRM systems serve as a valuable source of inspiration for the utilization of AI (Dilmegani, 2023; Basu, 2022; Blokdyk, 2022; Buyak, 2022; Castagna et al., 2020). These systems and their impact on customer relations are the point of interest of two courses, the CRM systems within the Management Informatics program and Customer Relationship Management as part of the International Trade program. CRM systems predominantly involve information technology to explain CRM modules, communication channels, knowledge management, or the application of various intelligences such as business intelligence. On the other hand, the Customer Relationship Management course supports international contacts, use of multilingual functions, analytical and creative thinking, effective methods of negotiation and providing a meaningful message, or automation processes. In the realm of education, ChatGPT outputs are utilized for reflecting on the presented content of the messages and understanding the discussed material. It is not about simply receiving information, but it involves analyzing the accuracy and depth of information on specific topic. Additionally, there are opportunities associated with the use of selected CRM systems in teaching, which enable agile management solutions, the creation of mind maps and knowledge databases. In term of communications, these are questionnaires to evaluate assigned tasks and know more about opinion and understanding. The question addresses in this paper is about usefulness of AI in education and its impact on analytical thinking, as well as its role in promoting diverse solutions influenced by different perspectives and conditions.

2 Methods

The courses' structure is given according to the syllabus. Practical examples utilizing CRM systems, often available in free versions with minimal restrictions. To support optimal solution, guide questions and example solutions are provided. ChatGPT elements and questionnaires are integrated into the teaching process to gather feedback and insight on the discussed topic. The attractiveness of the teaching is enhanced by analyses, including traditional SWOT assessment and more flexible evaluation of benefits and shortcomings with clarification of essential knowledge. A typical question is about the recommended procedure for solving a given task. The answer is not always clear because usually more than one path can be used, and the advantages or disadvantages depend on the individual knowledge and the specific focus of the task being addressed. From the teacher's point of view, it is important to encourage students to explore different solutions, express themselves effectively, organize their thoughts and propose the most advantageous procedure.

Teaching methods include lectures, discussions, group work in seminars and practical activities aimed at solving predetermined tasks. The preparation of learning materials includes the creation of study texts, presentations, case studies, links to interesting articles or other resources related to the topic. Direct interaction with students is sometimes challenge, discussions is usually started in connection with questionnaire results and the presentation of findings. This interaction serves as a valuable feedback mechanism to show how well discussed topic is perceived. Each group of students is unique, which requires greater flexibility. However, the teaching pace can be easily adapted to current requirements and focused on a more difficult topic or more complex tasks for inquisitive and active students. Questions and inaccuracies in the solution are a source for repetition and more detailed clarification for subsequent teaching sessions.

3 Research results

The first questionnaires were created in the survio.com application. At the start of the lectures, they were about general awareness of CRM systems and customer relation management such as:

- What do you think customer relations means to businesses? Why are customer relations resolved?

- Is the importance of customer relations growing nowadays? Why?

- What, in your opinion, can businesses improve in customer relations?

- What topic would you like to tackle in the subject CRM systems?

- What topic would you like to tackle in the Customer Relationship Management course?

- Are CRM systems complicated in your opinion?

- What does the imaginary wind in the sails bring to the further development of customer relationship management?

- What skills are needed to solve the above questions? Which ones did you use?

The answers varied. In some cases, there were only a few responses, while in other cases, there were different answers reflecting individual priorities. The following table presents a selection of these responses. See Table 1.

Table 1 Selected answers on questions from questionnaires

Questions	Answers
Is the importance of customer relations growing nowadays? Why?	definitely yes - customers are more and more demanding and therefore we can also observe the great importance of relationship marketing; due to the fact that customers are more demanding and their options for shopping, for example, are huge (related to globalization), companies must try to have good relations with customers and be attractive to customers
What topic would you like to tackle in the Customer Relationship Management course?	artificial intelligence, trends and innovations in customer relationship management, customer data analysis, cross-cultural CRM, customer loyalty and retention
What topic would you like to tackle in the subject CRM systems?	customers and building a relationship with customers, CRM selection and implementation, software and trends, introduction of different CRM systems - business intelligence and maybe a little touch on artificial intelligence, how to build a good relationship with a customer
Are CRM systems complicated in your opinion?	I can't answer yet - I didn't have experience, it depends on the point of view, for sure - it will be difficult to come up with something like this, the correct implementation of the system and its management can be a challenge for an inexperienced admin, for smaller companies the implementation and use of a CRM system can be relatively simple - especially if one is an online system, in my opinion, if a person gets to know the selected system then not, it depends on the specific CRM system - some can be simpler, with better graphic elements and interface and some can be complex
What does the imaginary wind in the sails bring to the further development of customer relationship management?	customers, the development of artificial intelligence, expanded automation, the prospect of higher sales, the effort to gain a competitive advantage, the entry of new innovative companies into the market, or the increasing number of customers with different demands, tastes, needs
What skills are needed to solve the above questions? Which ones did you use?	knowledge of the given system and the art of searching

Source: Own processing

Another innovation in student lectures involves integrating statements generated by ChatGPT. This integration includes small tasks, such as:

- Specify what is CRM from various authors with links on source of citation in a table.

- Specify different architecture CRM systems in a table.

- Specify metrics and KPI for CRM in a table.

- Specify CRM category from history to present, please specify answer in a table.

Every such output from ChatGPT is cited, for example such this: ChatGPT. (2023). Specify what is CRM from various authors with links on source of citation in a table. [Response to user question]. Available from chat.openai.com/chat. Default mentioned definitions are paraphrased and simplified. It is needed to search more detailed information in available sources such as literature, articles from journals, or other recommendations from the Internet. This situation is a good starting point for subsequent analyzes and critical thinking.

Practical work to support contact with customers uses information technology. CRM systems have integrated artificial intelligence and advantage automation into implemented processes (Homer, 2023; Jagadeesh, 2023; Jaspreet, 2023; Samit, 2023; Zhang. and Dai, 2020). Now, it is start of lectures but in focus of interest will be also in well-known AI benefits for CRM. Please, see Table 2.

Table 2 Advantages AI for CRM systems

AI benefits for CRM	CRM processes
Personalized communication	an individual approach to each customer, which allows a better understanding of their needs and preferences; personalized messages are processed for each customer so that each customer feels that the company cares about him and is ready to meet individual requirements
Predictive analytics	analytical techniques and algorithms are used to predict customer behavior, needs and preferences; better ability to personalize offers and communication with the customer leads to higher satisfaction and loyalty; predictive analysis also serves to identify potential risks and opportunities in relation to customers
Task automation	routine tasks are processed, such as updating contact information, tracking customer interactions, and generating reminders for follow-up communications; tasks are automatically assigned to team members in accordance with defined priorities; creative customer care is supported
Social media monitoring	monitoring and analyzing customer messages and comments on various social media; again, the aim is to better understand the views and needs of customers; this feedback makes it possible to respond flexibly to positive and negative client experiences and to resolve any complaints or questions
Pattern recognition	pattern recognition is the process of identifying and analyzing customer behavior patterns to optimize interactions and improve the overall customer experience; the process uses advanced technologies such as machine learning algorithms and data analysis; the results of the analysis are used to personalize marketing campaigns, increase customer loyalty and improve the efficiency of the sales process
Customer classification	the process of solving customer segmentation into different groups based on different characteristics such as demographics, behavior, purchase history and preferences; the appropriate classification helps to better understand individual customer segments and subsequently adapt marketing and business strategies
Revenue forecasting	provides estimates for future revenue based on historical data on sales, customers and market trends; the process uses analytical tools and techniques, such as predictive analytics and modeling, to make forecasts regarding future sales and market developments; accurate forecasts serve to better plan inventory, marketing campaigns and business strategy

Source: Own processing

4 Conclusions

AI plays an irreplaceable place in various software applications, with CRM systems serving as a good example. Naturally, the AI integration into student lectures has interest of teachers. In the context of CRM, it extends beyond the capabilities of CRM systems. There is room for innovation thought interactions with AI, such as ChatGPT. Benefit is more space for analytical thinking and a deeper understanding of customers. Based on realized questionnaires, it is good that students understand importance of customer relationship management. Their curiosity about trends and innovations is expected. In accordance with their expectations, the topics discussed also include different CRM systems, business intelligence, and

artificial intelligence. From point of view of teacher, there is responsibility to demonstrate the diversity within CRM and show that it is not a difficult topic.

Acknowledgement

References

AI marketing tools software (2023). Avalaible at: https://www.capterra.com/ai-marketing-tools-software/. Accessed 2023.

AI sales assistant software (2023). Avalaible at:https://www.capterra.com/ai-sales-assistant-software/. Accessed 2023.

AI writing assistant software (2023). Avalaible at: https://www.capterra.com/ai-writing-assistant-software/. Accessed 2023.

Amazon - Alexa (2023). Avalaible at: https://developer.amazon.com/en-US/alexa. Accessed 2023.

Artificial intelligence software (2023). Avalaible at: https://www.capterra.com/artificial-intelligence-software/. Accessed 2023.

Basu, D. (2022). How to automate workflow through CRM to scaleup your business at profitable margin: automation through CRM. ASIN B0B91C36K8.

Blokdyk, G. (2022). Manager CRM Critical Questions Skills Assessment. Independently published. ASIN B0BDXM365Q.

Buyak, A. (2022). CRM Admins Foundations: Great Wisdom For All Roles In The Growing CRM Industry. Independently published. ASIN B0BRD9KFDC.

Castagna, F. et al. (2020). Customer Knowledge Management in SMEs Facing Digital Transformation. *Sustainability*, 12(9), 3899.

ChatGPT (2023). Avalaible at: https://openai.com/blog/chatgpt. Accessed 2023.

DeepL (2023). Avalaible at: https://www.deepl.com/translator. Accessed 2023.

Dilmegani, C. (2023). AI-powered CRM Systems in 2023: In-Depth Guide. Avalaible at: https://research.aimultiple.com/crm-ai/. Accessed May 8, 2023.

Google Assistant (2023). Avalaible at: https://blog.google/products/assistant/google-assistant-bard-generative-ai/. Accessed October 4, 2023.

Homer, G. (2023). Customize Your CRM: How To Customize Your CRM For Beginners. Independently published. ISBN-13 979-8396704732.

IBM Watson (2023). Avalaible at: https://www.ibm.com/watson. Accessed 2023.

Jagadeesh, P. (2023). CRM Mastery : Building and Managing Strong Customer Relationships. Notion Press. ASIN B0C53GY45H.

Jaspreet, K. (2023). AI-Driven CRM Framework for Business Applications. Independent Publishers. ISBN-13 978-1805297994.

Lamanna, Ch. (2023). Introducing Microsoft Dynamics 365 Copilot, the world's first copilot in both CRM and ERP, that brings next-generation AI to every line of business. Avalaible at: https://blogs.microsoft.com/blog/2023/03/06/introducing-microsoft-dynamics-365-copilot/. Accessed March 6, 2023.

Salesforce Artificial Intelligence (2023). Avalaible at: https://www.salesforce.com/products/einstein-ai-solutions/. Accessed 2023.

Samit, Ch. (2023). Customer Relationship Management: A Global Approach. SAGE Publications Ltd; 1st edition. ASIN B0BWJYF5JV.

Siri (2023). Avalaible at: https://www.apple.com/in/siri/. Accessed 2023.

What's New in HubSpot AI (2023). Avalaible at: https://www.hubspot.com/products/artificial-intelligence. Accessed 2023.

Work Smarter with Zia (2023). Avalaibl at: https://www.zoho.com/zia/. Accessed 2023.

Zhang, Z. and Y. Dai (2020). Combination classification method for customer relationship management. *Asia Pacific Journal of Marketing and Logistics*, 32(5), pp. 1004-1022.