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REIMAGINING CUSTOMER ANALYTICS: EMPOWERING A DIGITAL BUSINESS WITH AI-DRIVEN PERSONALISATION THROUGH CHATGPT

ABSTRACT

ChatGPT, an advanced artificial intelligence (AI) tool developed by OpenAI, excels in natural language processing (NLP) for understanding and generation. In the age of rapidly advancing digital technologies, businesses are continually seeking innovative ways to enhance customer experience and optimize their strategies. This study explores the potential of ChatGPT in analyzing customer data and generating predictive insights for customer-centric strategies in digital businesses. In this study, qualitative methods were used to conduct interviews with ten experts using ChatGPT for customer analytics in Bangkok, Thailand, with participants selected through purposive sampling. The collected data was analyzed using content analysis, Taguette and NVivo. The results highlight the exciting possibilities of ChatGPT to drive customer-centric strategies through insightful analytics and predictive capabilities. This study paves the way for further exploration of AI-powered tools to revolutionize customer engagement and foster stronger digital relationships. ChatGPT's ability to process large amounts of text data makes it valuable for analyzing customer data and predictive analytics. The findings suggest that ChatGPT is a promising resource for businesses seeking to understand their customers, customize their services and increase overall satisfaction. However, despite its great potential, further research and development is needed to maximize opportunities and address limitations.

KEYWORDS: *Customer Analytics, ChatGPT, Artificial Intelligence (AI), Natural Language Processing (NLP)*

1. INTRODUCTION

To reap the benefits of Industry 4.0, digital transformation and technology have become essential in all industries (Ray & Pareek, 2023; Velmurugan et al., 2022). AI has made rapid progress in recent years and has led to widespread application. The use of machine learning (ML) algorithms has enabled AI systems to learn from data and continuously improve their performance since the 1980s. In particular, the emergence of deep learning (DL) techniques, such as neural networks, has significantly advanced the development of generative AI in areas such as NLP, image and audio recognition and autonomous systems. There has been a growing interest in the concept of generative AI in various fields, including

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business, management and economics (Wach et al., 2023). Among the notable developments in the chatbot industry, ChatGPT, a specialized application or system that uses the Generative Pre-trained Transformer (GPT) model, is a leading example. It is based on the transformer architecture and has gained considerable popularity for producing natural-sounding, human-like text responses in conversational interactions, using DL and ML algorithms developed by OpenAI (Lund et al., 2023; Santhosh et al., 2023).

In the fast-paced world of digital business, customer analytics has emerged as a critical pillar for success. Customer analytics in the context of digital business is the process of collecting, analyzing and interpreting data related to customer behavior and interactions with a company's digital channels. These channels include websites, mobile applications, social media platforms, email campaigns, online advertisements, and much more. Customer analytics and digital marketing are closely linked in the modern business landscape. Digital marketing uses customer analytics to develop data-driven strategies that target the right audience with personalized messages, optimize marketing efforts, and enhance overall customer experience (Lehrer et al., 2018; Matarazzo et al., 2021; Mogaji et al., 2021). One of the main goals of customer analytics in digital marketing is to gain actionable insights into customer preferences, needs and behaviors. By harnessing the power of data, businesses gain invaluable insights into customer behavior, preferences and interactions with digital channels. With this knowledge, companies can refine their strategies and offer personalized experiences that appeal to individual customers. From data collection and integration to predictive analytics and sentiment analysis, the process of customer analytics allows businesses to identify trends, segment their audience and optimize their offerings. Ultimately, this data-driven approach fosters customer engagement, builds loyalty and drives business growth in the ever-evolving digital landscape (Erevelles et al., 2016; Kitchens et al., 2018; Vassakis et al., 2018).

In today's digital landscape, businesses are constantly seeking innovative approaches to understand customer behavior, predict customer churn and provide personalized recommendations. With advances in AI and NLP, language models and tools such as ChatGPT have gained prominence due to their ability to generate human-like responses and understand complex language patterns. Numerous research studies have been conducted to investigate the potential applications of ChatGPT in various industries. For example, in the construction industry, Prieto et al. (2023) investigated the application of ChatGPT in construction project planning and found that it ef-fectively creates coherent and logical schedules. Although participants reported positive experiences and acknowledged the tool's potential to streamline preliminary tasks, they also pointed out significant limitations that require further development before ChatGPT can be widely adopted in the construction industry. In academia, Firat (2023) examined the impact of ChatGPT on students and universities. He confirmed the educational benefits and identified challenges and barriers to integrating the tool from the perspective of academics and students. Similarly, Sallam et al. (2023) conducted a study in the field of health education to analyze the advantages and disadvantages of using ChatGPT in medical, dental, pharmacy, and health policy education, noting its potential benefits and significant drawbacks. However, the impact of ChatGPT in the field of customer analytics has only been studied to a limited extent. Using a qualitative approach involving in-depth interviews, this study aims to explore the potential of ChatGPT in utilizing customer data to drive customer-centric strategies for a digital business. The findings of this study can provide valuable insights into the feasibility and effectiveness of using ChatGPT as a tool for analyzing customer data and gaining predictive insights, paving the way for customer-centric strategies in the field of digital business.

The paper is divided into six different sections, each of which contributes to a comprehensive and detailed study of the topic. The first section introduces the study and emphasizes its importance and purpose. The second section provides a comprehensive overview of the existing literature. The third section describes the research methodology used to collect the relevant data. The fourth section presents the findings and results of the study. The fifth section provides a thorough analysis and interpretation of these findings in relation to the objectives of the study. Finally, the sixth section draws conclusions, makes recommendations for further research and discusses any issues that arose during the research process.

2. LITERATURE REVIEW

ChatGPT is a groundbreaking development in the field of NLP and AI. Developed by OpenAI, ChatGPT is a chatbot and virtual assistant based on the GPT 3.5 architecture. This sophisticated AI system has been trained with an extensive text corpus covering various topics and domains. The literature on ChatGPT highlights its exceptional capabilities in understanding and generating human-like text, making it an invaluable tool for a wide range of applications. Researchers and developers have praised its ability to

conduct coherent and contextualized conversations and provide users with help, creative ideas and informative insights. Thanks to its impressive performance, ChatGPT has opened up new possibilities in the fields of virtual assistance, content creation and language-based interactions, reshaping the landscape of human-AI interactions in meaningful ways. However, certain challenges have also been cited in the literature, such as potential biases in the content generated and ethical concerns regarding the responsible use of such powerful language models. As ChatGPT continues to evolve, further advances and even more profound impacts on various industries and societal areas are expected in the literature (Dwivedi et al., 2023; Ray, 2023; Roumeliotis & Tselikas, 2023). The combination of customer analytics and ChatGPT represents an exciting fusion in the business world, especially with regard to customer interactions. Customer analytics is about the systematic collection, analysis and interpretation of customer data to gain valuable insights into their behavior, preferences and requirements. On the other hand, ChatGPT, equipped with NLP capabilities, serves as a powerful tool for interacting with customers and providing support in a seamless and efficient manner (Ausat et al., 2023; Clark, 2023; Hassani & Silva, 2023; Ironhack, 2023).

In today's age of information technology (IT) and the abundance of data extracted from various sources to improve customer relations and business management in companies, it is crucial to keep up with the trends of analytics. The adoption of analytics as the new name for evidence-based management and data-driven decision making is due to its adaptation to growing business demand, greater accessibility and affordability, and evolving organizational culture. An important aspect of business analytics lies in customer analytics (Ćosić, 2016; Lu et al., 2021). Customer analytics is a powerful tool that has revolutionized the way businesses work in various industries. With this approach, businesses are able to understand their operations in detail, make informed decisions based on data, accurately predict future trends and ultimately drive growth and profitability (Germann et al., 2014; Sowa, 2023).

The financial landscape is undergoing a significant transformation in which data and technology have become invaluable assets. As customer expectations evolve under the influence of other industries with multi-channel access, seamless integration and precise targeting, it is critical for all stakeholders to adapt and respond to changing customer needs. To develop successful products and services, companies need to make effective use of the available data. This opens up opportunities to co-create value and provide personalized services, enabling a customer-cen-

tric approach that goes beyond simply predicting customer behavior. The key factor that is emerging is the importance of leveraging digital innovation and data quality, rather than relying solely on data volumes or big data. Investing in analytics and service techniques can significantly improve customization and performance (Grassi et al., 2022). In the banking sector, customer analytics helps financial institutions gain insights into the behavior, preferences and needs of their customers. It enables banks to understand their customers' financial goals, identify cross-selling and upselling opportunities and offer personalized financial products and services. Customer analytics also helps detect and prevent fraud by analyzing transaction patterns and highlighting suspicious activity. In addition, it plays an important role in customer retention strategies as banks can proactively address customer concerns, offer relevant recommendations and improve the overall customer experience (Ferreira et al., 2022; Indriasari et al., 2022).

The travel and tourism sector is one of the largest economic sectors in the world, and its growth is set to continue in the future. The advent of the internet, along with advanced technologies such as Artificial Intelligence (AI), has unlocked limitless potential for further expansion. Currently, online bookings are the first choice when it comes to reserving hotel accommodation, flights and favorite activities even before reaching the destination. Although traditional travel agencies and tour operators are still operating, they too have recognized the importance of having a strong online presence and conducting business over the internet. This shift reflects the industry's adaptation to the changing preferences and behaviors of modern travelers (Neochoritis, 2020; Wei, 2023). In the travel industry, customer analytics helps travel agencies, airlines and other travel service providers understand travelers' preferences, booking habits and destination choices. By analyzing customer data, travel companies can recommend personalized travel packages, offer targeted discounts and optimize pricing strategies. Customer analytics also helps to customize the itinerary and ensure that travelers receive relevant recommendations and experiences based on their interests and preferences. In addition, by monitoring customer feedback and reviews, travel companies can continuously improve their services and address customer issues (Epam, 2022; Techspian, 2023).

In the contemporary world, hotel companies face a highly competitive environment in which the hotel industry is of great economic importance and faces strong competition. This industry is flooded with new technologies that act as catalysts for innovation. As hotels are data-intensive, they collect huge amounts of data in various forms. The pressure to

provide superior service to customers, combined with the need to constantly innovate, is a constant challenge, while costs are rising. The survival and success of these hotels depends on their overall financial performance, their ability to adapt to the changing landscape and their ability to transform and expand their services to meet customer demands. Many companies have recognized the transformative potential of technology and data analytics and are now integrating business intelligence and analytics technologies to improve reporting and decision-making processes (Napierała & Birdir, 2020; Tong-On et al., 2021). Customer analytics in the hotel industry enables hoteliers to understand the preferences, booking behavior and stay habits of their guests. Hotels can use this data to create targeted marketing campaigns, offer personalized promotions and optimize room rates based on demand trends. By analyzing customer feedback and sentiment, hotels can identify areas where their services and amenities can be improved. Customer analytics also help in the management of loyalty programs. This allows hotels to reward loyal customers and build lasting relationships that lead to more repeat bookings and positive word of mouth (Bhattacharjee et al., 2017; Cloutier, 2023; Hall, 2023).

E-commerce companies have quickly become one of the leading adopters of big data analytics as they need to stay ahead of the competition. These companies often process a mixture of structured and unstructured data. Structured data includes demographic information such as names, age, gender, dates of birth, addresses and preferences. Unstructured data, on the other hand, includes various sources such as clicks, likes, links, tweets and voice data. In the big data analytics environment, the biggest challenge is to effectively process both types of data to gain meaningful insights that can improve conversion rates. By analyzing and interpreting this diverse data, e-commerce companies can gain valuable insights into their customers' behavior and preferences, leading to more informed decisions and better business performance (Akter & Wamba, 2016). Customer analytics is at the heart of the e-commerce industry. Online retailers use customer data to understand shopping behavior, preferences and buying patterns. With this information, e-commerce companies can offer personalized product recommendations, targeted promotions and optimize the layout of the website to enhance the overall user experience. Customer analytics also play an important role in analyzing purchase abandonment. They enable e-commerce businesses to identify the reasons for abandoned purchases and implement strategies to recover lost sales. In addition, customer analytics helps in optimizing inventory management, identifying popular products and predicting demand (Alrumiah & Hadwan, 2021; Bawack et al., 2022; Bhadkamkar et al., 2022; Sista et al., 2021).

Robbert et al. (2023) deal with the applications of large language models (LLMs) in the field of marketing analytics and emphasize the potential of generative AI. The article highlights the sophisticated architectures of transformers and diffusers that underpin these models and emphasizes their utility for a range of marketing functions. These include analyzing strategies, summarizing data, making recommendations, extracting insights, reducing bias, increasing productivity, identifying trends and managing risk. The study emphasizes that collaboration between skilled teams, expertise and careful planning are essential for effective implementation of generative AI in marketing analytics. It also looks at the inherent risks and the methods for measuring the performance of generative AI in this area and provides a comprehensive exploration of the transformative potential and challenges associated with LLM in marketing.

Shahin et al. (2024) make a pioneering contribution to the field by using OpenAI's GPT-3.5 Turbo model, which utilizes advanced NLP features to extract the voice of the customer from Twitter-based customer support interactions. Traditional customer voice extraction methods are often unable to fully capture the complexity of customer sentiment, and while modern ML techniques have brought some improvements, they still struggle to capture the contextual nuances of digital customer communications. This study highlights GPT-3.5 Turbo's exceptional ability to understand conversational contexts more deeply and utilize a chat-based approach for more intuitive data processing. In addition, the capability for large-scale, multilingual analysis enables a more thorough and comprehensive assessment of the customer voice. The findings establish a link between these technological advances and Lean Six Sigma 4.0 and suggest that the integration of GPT-3.5 Turbo can significantly improve customer-centric strategies in the context of Industry 4.0. This research represents a significant development in analyzing the customer voice and offers new opportunities for more effective, real-time, data-driven customer service tactics and stronger decision-making processes in product development and process improvement.

3. METHODOLOGY

In this study, a qualitative research approach was pursued, in particular through the use of in-depth interviews as a method of data collection. Using the interpretivist and constructivist paradigm, qual-

itative research aims to fully understand a research topic rather than predict outcomes as in the positivist paradigm (Tomaszewski et al., 2020). Qualitative research allows the broader context around the use of ChatGPT in customer analytics to be explored. It allows researchers to understand the social, organizational and technological factors that may influence the effectiveness and feasibility of implementing ChatGPT to gain customer insights and recommendations. In addition, interviews provide participants with the opportunity to share their unique viewpoints, experiences and insights. This approach allows themes and patterns to emerge that may not have been previously anticipated. It allows researchers to identify new perspectives, novel applications, and potential limitations of using ChatGPT for customer-centric strategies. Using qualitative interviews, researchers can gather in-depth data and capture the nuances, motivations and reasons behind participants' opinions and experiences. This depth of information can enhance understanding of the potential benefits and challenges associated with the application of ChatGPT in customer analytics. The interviews were conducted both online and onsite, depending on how it suited the participants best. They were conducted in English with experts and professionals who have a deep understanding of customer analytics and AI technologies, particularly ChatGPT. Please refer to the appendix for the list of interview questions used in this study.

In line with the recommendation in qualitative research to achieve data saturation, a minimum sample size of six participants was defined as the minimum limit for the study (Jangjarat et al., 2023). Thus, a total of 10 key informants were interviewed. The sample was purposively selected to ensure that the participants had experience in analyzing customer data and gaining predictive insights. Participants had to meet the following inclusion criteria: a) they had to be at least 18 years old, b) they had to be Thai employees, managers or stakeholders directly involved in customer analytics, c) they had to work in Bangkok, Thailand, and d) they had to have recent knowledge and experience with ChatGPT. By working with experts and professionals who are familiar with customer analytics and AI technologies, the study can gain valuable insights from individuals who have specialized knowledge and practical experience in this field. These experts can offer nuanced perspectives, highlight potential challenges and provide valuable input on the use of ChatGPT for customer-centric strategies. Interview data was collected in May 2023.

The interviews were recorded and then transcribed to enable in-depth content analysis. In this method of qualitative content analysis, data is sys-

tematically organized into different categories or themes, where the researcher's ability to draw valid conclusions through inductive reasoning plays a crucial role. Through careful examination and continuous comparison of the data, researchers derive themes and categories directly from the content (Mezmir, 2022; Vespestad & Clancy, 2021). In parallel with the qualitative methodology and following the guidelines for qualitative analysis software outlined by Shoufan (2023), respondents' answers were processed and analyzed using Taguette. This free application was developed specifically for qualitative data analysis and is suitable for a range of data types, including interview transcripts, survey responses and open-ended questions. Taguette facilitates the coding of text segments, making it easier to identify patterns or themes. To this end, text segments are marked and tagged or coded, and you can add new tags as the analysis progresses. Taguette also supports multiple tagging of text segments that contain different ideas. After the initial tagging, the data was exported to a Word file for further analysis, which involved a cognitive process of correlating similar codes and grouping them into overarching themes. According to Mortelmans (2019) and Olapane (2021), NVivo, a qualitative data analysis software, supports the management and organization of large textual data and improves the ability to search, sort and analyze the data efficiently. This software plays a key role in enabling researchers to perform in-depth and comprehensive analysis. It plays an important role in the field of qualitative data analysis by providing a robust suite of tools for efficient data management and analysis.

Therefore, the interview transcripts were analyzed using content analysis and Taguette, systematically categorizing and interpreting the data to provide meaningful insights into ChatGPT's capabilities in analyzing customer data and generating predictive insights. The themes identified helped to achieve the objectives of the study and deepen understanding of the topic. To enhance the analysis of the interview transcripts in the study, a word cloud generated by NVivo was incorporated. This visual tool is particularly useful for quickly identifying and displaying the most frequently occurring words in the dataset, which can help to identify prevalent themes and concepts at a glance. In summary, the combination of content analysis, Taguette and NVivo enabled a rigorous, efficient and systematic approach to qualitative data analysis that allowed for a thorough exploration and interpretation of the study's data.

TABLE 1. Demographic information on the respondents and interview dates and times

No.	Gender	Age	Industry	Date and time of interview
R1	Male	37	Banking	May 22, 2023 at 10:00 am
R2	Male	29	Hotel	May 22, 2023 at 11:00 am
R3	Male	39	Travel	May 23, 2023 at 09:00 am
R4	Male	41	E-commerce	May 23, 2023 at 10:00 am
R5	Male	39	Hotel	May 23, 2023 at 11:00 am
R6	Female	34	E-commerce	May 24, 2023 at 09:00 am
R7	Female	37	Hotel	May 24, 2023 at 10:00 am
R8	Female	42	E-commerce	May 24, 2023 at 11:00 am
R9	Female	31	Travel	May 25, 2023 at 10:00 am
R10	Female	34	Banking	May 25, 2023 at 11:00 am

4. RESULTS

To investigate the use of ChatGPT, a comprehensive study was conducted to explore the views of ten individuals working in customer analytics, including frontline employees, managers and other stakeholders. Participant demographics, including gender, age, industry, and date and time of interview, are presented in Table 1. The sample consisted of equal numbers of male and female respondents, five of each gender in total, ranging in age from 29 to 42. Of the participants, two were employed in the banking industry, three in the hotel industry, two in the travel industry and three in the e-commerce industry. It is worth noting that all participants in the study were based in Bangkok, Thailand.

Through a systematic analysis of participants' responses, several salient themes regarding the use of ChatGPT in customer analysis were identified. This process began with the transcription of all interviews and multiple readings to ensure complete familiarity with the data. Using Taguette, an open coding process was conducted where descriptive labels emerged directly from the text. These initial codes were then further explored and grouped into broader categories through axial coding to identify relationships and patterns. The potential themes were iteratively refined to obtain distinct and meaningful categories. To ensure reliability, researchers reviewed the coding and themes and resolved discrepancies by consensus. Themes were named based on recurring topics: NLP for Data Analysis' represented ChatGPT's ability to gain insights from unstructured data; 'Predictive Modelling' reflected discussions about forecasting customer behavior; 'Personalised Recommendations' emphasized customizing interactions based on customer preferences; 'Customer Segmentation' focused on dividing customers into target groups; and 'Sentiment Analysis' emphasized understanding customer emotions by analyzing feedback. This careful process ensured that the themes identified reliably represented ChatGPT's potential in improving customer data analysis and gaining predictive insights. To improve understanding of the results, a word frequency query was performed using NVivo, resulting in a visually represented word cloud (Figure 1). This word cloud clearly shows the most frequently occurring words during the interviews and provides an immediate insight into the prevalent themes.

The word cloud shown in Figure 1, which was created from the interview data using NVivo, visually highlights the most frequently occurring terms in the conversations. This visualization method plays a crucial role in identifying and highlighting the primary focus areas of the interviews. Terms such as "customer", "data", "preferences" and "ChatGPT" appear in the word cloud, indicating a strong focus on analyzing customer data and personalizing customer experiences using AI technology. The dominance of these terms underlines the essential role of ChatGPT in gaining actionable insights from customer interactions and preferences. These terms came up frequently in the interviews as participants emphasized the importance of using AI to improve customer analytics and customer retention strategies. The repeated appearance of "ChatGPT" alongside "customer" and "data" reflects the growing reliance on advanced NLP tools to achieve deeper understanding and more effective

FIGURE 1. Word Cloud of Key Terms from Interviews on ChatGPT's Role in Customer Data Analysis and Personalization (Source: The authors, using NVivo)

engagement in digital business practices. The concentration of specific terms related to customer data and AI technologies within the word cloud indicates a clear trend towards more dynamic and customized customer relationship management strategies in the industry. It underscores the shift towards data-driven decision-making processes that rely heavily on AI capabilities to optimize customer interactions and satisfaction. This trend is indicative of the broader digital transformation in industries where understanding and predicting customer behavior through AI has become a central part of competitive strategy. In summary, this analysis not only aligns with the study's objectives to explore the role of ChatGPT in customer analytics, but also confirms the potential of such technologies to revolutionize the way companies interact with and understand their customers, leading to better customer experiences and business outcomes.

4.1. NLP for data analysis

ChatGPT can be used to process and analyze unstructured customer data, such as survey responses, social media interactions, customer support logs and product reviews. Its NLP capabilities make it possible to extract key insights, sentiments and patterns from this data that help companies understand customer preferences, pain points and behavior.

ChatGPT can detect emerging trends or issues by monitoring and analyzing customer data over time. It can track changes in sentiment and keyword frequency, alerting you to potential problems or opportunities early on. By spotting these patterns in real-time, you can proactively address concerns, prevent negative public relations (PR), and even stay ahead of the competition by capitalizing on emerging trends (R2).

ChatGPT can segment customers based on their behavior, preferences, and other attributes, and then analyze sentiment across these segments, providing a comprehensive understanding of how

different customer groups perceive the products and services. By identifying sentiment variations, you can develop targeted marketing strategies and personalized offers to appeal to each segment effectively (R6).

ChatGPT is designed to be flexible and can be integrated into your existing systems and tools through APIs (Application Programming Interfaces). This way, you can seamlessly incorporate its NLP capabilities into your workflow, automating the data processing and analysis tasks. Whether you have a data analytics platform, or any other business tool, ChatGPT can be adapted to work with it efficiently (R10).

4.2. Predictive modelling

With its ability to process and interpret customer data, ChatGPT can be used to create predictive models. These models can predict customer behavior, such as purchase intent, likelihood to churn and product preferences. By understanding these patterns, companies can make informed decisions to retain customers and improve their overall experience.

ChatGPT can process and interpret customer data, enabling you to build predictive models. These models can forecast customer behavior, such as purchase intent, churn likelihood, and even identify their product preferences. By analyzing historical data and real-time interactions, you can make informed decisions to retain customers and enhance their overall banking experience. With these insights, you can personalize services and recommend relevant financial products, ultimately increasing customer satisfaction and loyalty (R1).

Data privacy and security are of utmost importance. It is essential to implement encryption and secure data handling practices within your e-commerce platform. Also, regularly review and update your data security measures to stay up-to-date with the latest industry standards and best practices (R4).

Predictive models can assist in predicting potential churn, enabling you to take proactive steps to retain valuable customers and enhance overall guest retention. Integrating ChatGPT into your reservation system is feasible through APIs. By connecting the predictive models to your database, you can seamlessly analyze guest data in real-time. This integration allows you to offer personalized recommendations and incentives during the booking process, enhancing the overall guest experience and driving customer loyalty (R7).

4.3. Personalised recommendations

ChatGPT can develop personalized recommendations by analyzing customer preferences, historical interactions and purchase history. This allows the model to suggest relevant products, services or content to improve customer loyalty and satisfaction in various industries such as e-commerce, digital marketing and hospitality.

ChatGPT's ability to analyze customer preferences, historical interactions, and purchase history enables it to generate personalized recommendations. For your bank, this means that customers can receive tailored suggestions for financial products and services based on their unique needs and financial behavior. Whether it's offering suitable credit card options, investment opportunities, or loan packages, personalized recommendations can enhance customer engagement and satisfaction by providing them with solutions that align precisely with their goals (R1).

Merging ChatGPT into your travel booking platform can be achieved through APIs. By connecting ChatGPT to your customer data, you can generate real-time personalized recommendations during the booking process. These recommendations can be displayed on your website or shared through email communications to entice travelers and increase their engagement with your travel services (R3).

Integrating ChatGPT into your hotel's reservation system is an effective way to deliver personalized recommendations. By leveraging the guest data you already collect, ChatGPT can process and analyse it to generate real-time suggestions. These recommendations can then be presented through your booking portal or via email communications, enticing guests to return and enjoy a customised experience (R5).

4.4. Customer segmentation

ChatGPT can help to segment customers based on their characteristics and behavior. By grouping customers with similar characteristics, companies can tailor their marketing strategies and offers to the specific needs of each segment, resulting in more effective communication and engagement.

ChatGPT can analyze guest data, such as booking history, preferences, and feedback, to help you segment your customers effectively. By categorizing guests based on attributes like travel frequency, preferences for room types or amenities, and their preferred travel seasons, you can tailor your marketing strategies and offerings to each seg-

ment. This will enable you to craft personalized promotions and communications that resonate with the specific needs and interests of different guest segments, leading to increased bookings and guest satisfaction (R2).

ChatGPT can analyze customer data and identify patterns that indicate potential high-value customer segments. By examining factors such as average order value, frequency of purchases, and customer lifetime value, you can pinpoint segments that are most likely to become loyal and profitable customers. With this knowledge, you can tailor special offers, loyalty programs, and marketing campaigns to further engage and retain these high-value customers (R6).

ChatGPT can analyze customer data, such as travel history, destination preferences, and trip durations, to help you segment your customers effectively. By categorizing travelers into groups based on their interests, travel habits, and budget preferences, you can customize your marketing messages and travel packages to cater to the specific needs of each segment. This targeted approach will enhance the relevance of your promotions and offers, increasing the chances of converting potential customers into bookings, resulting in high business performance (R9).

4.5. Sentiment analysis

ChatGPT can perform sentiment analysis on customer feedback and social media data to determine customer satisfaction and sentiment towards the brand. By analyzing customer reviews, comments and interactions on platforms such as Twitter, Facebook and Instagram, ChatGPT can identify underlying emotions and opinions about products or services. This analysis can help companies identify specific areas for improvement, such as product features that are frequently criticized or aspects of customer service that need to be improved.

ChatGPT can perform sentiment analysis on customer feedback, reviews, and social media data related to your travel services. By analyzing this data, it can gauge the overall sentiment towards your travel agency, identifying positive and negative sentiments expressed by customers. This analysis will allow you to understand how customers perceive your services and help you make improvements to enhance their satisfaction and increase their loyalty (R3).

Understanding guest sentiments enables you to enhance your services and address any negative feedback promptly. Integrating ChatGPT for sentiment analysis can be achieved by connecting

it to your customer feedback platforms, review websites, and social media accounts through APIs. This way, ChatGPT can access and process the relevant data, performing sentiment analysis in real-time or at regular intervals based on your preferences. The analysis results can be presented in a dashboard or through reports, making it easy for your team to take actionable steps (R7).

ChatGPT can perform sentiment analysis on customer feedback, reviews, and social media interactions related to your e-commerce platform. By analyzing this data, it can gauge the overall sentiment towards your brand, helping you understand how customers perceive your services. This analysis enables you to make data-driven decisions to improve customer satisfaction and address any issues promptly (R8).

5. DISCUSSIONS

Using a qualitative approach, this study explored the application of ChatGPT in customer analytics and discovered several important themes, including NLP for data analysis, predictive modeling, personalized recommendations, customer segmentation, and sentiment analysis. Participants agreed that ChatGPT has the potential to effectively analyze customer data and provide predictive insights that can drive customer-centric strategies for digital businesses.

ChatGPT can help companies effectively segment their customer base by categorizing customers based on their preferences, demographics or behavior. This allows companies to better tailor their marketing strategies, product offerings and customer support to the needs of each segment, as Frąckiewicz (2023a) notes. Furthermore, NLP plays a crucial role in ChatGPT's capabilities as it can gain valuable insights from unstructured customer data such as feedback, reviews and support tickets. By using NLP, organizations can gain a deeper understanding of customer preferences, pain points, and sentiments, which is consistent with Frąckiewicz (2023b) and Vasilopoulou et al. (2023). Furthermore, ChatGPT's ability to process and understand textual data makes it valuable for predictive modeling. When trained on historical customer data, companies can gain predictive insights that anticipate customer behavior, identify potential churn risks, and predict customer preferences, as noted by Vo et al. (2021). In addition, with its ability to analyze large volumes of customer interactions, ChatGPT can help create personalized product or service recommendations. By understanding individual preferences and behavioral patterns, companies can offer more targeted and relevant recom-

mendations, improving the overall customer experience, which is in line with George and George (2023). Sentiment analysis is an important part of customer analytics. ChatGPT can analyze customer sentiment expressed in reviews, feedback or posts on social media. By understanding customer sentiment, organizations can measure customer satisfaction, identify potential issues, and proactively respond to feedback, which is consistent with Carvalho and Ivanov (2023) and Alaei et al. (2023).

The positive response of participants to the potential of ChatGPT in customer analytics suggests that it can play an important role in developing customer-centric strategies for digital businesses. By utilizing ChatGPT's voice processing capabilities, companies can gain a competitive advantage by making data-driven decisions that are aligned with their customers' needs and preferences. However, it is important to be aware of potential challenges and limitations, such as privacy concerns and bias in the data used to train ChatGPT. Organizations must also exercise caution when interpreting the results of the model, as it may not always provide accurate predictions or correspond to real-world scenarios. The results of this study are consistent with the research findings of Rivas and Zhao (2023), who emphasize the importance for companies to carefully evaluate the potential risks and benefits of implementing ChatGPT into their marketing strategies. It is important that organizations develop best practices for ChatGPT marketing and have data science experts on their marketing teams. If ethical considerations are prioritized and human oversight is implemented, ChatGPT can revolutionize marketing while mitigating the potential harm to stakeholders. Human oversight is crucial to ensure that the decisions and content generated by ChatGPT systems are in line with ethical guidelines set by stakeholders or governments. This ensures that the use of ChatGPT is responsible and in line with the values and expectations of all stakeholders. By taking these precautions, companies can maximize the positive impact of ChatGPT on their marketing strategies while minimizing potential risks and ensuring a customer-centric approach. Korkmaz et al (2023) analyzed users' feelings towards ChatGPT using Twitter data. The results showed that a significant proportion of first-time users of ChatGPT perceived the experience as successful and expressed satisfaction with the tool. However, the study also identified negative emotions such as fear and anxiety among some users. It is important that companies take these aspects into account when using ChatGPT for customer analysis and decision-making processes.

As technology evolves, the responsible and ethical use of AI, including language modeling tools such as ChatGPT, is crucial to ensure its positive impact on customer analytics and overall business strategies. Transparency, privacy and regular model updates based on the latest information are essential considerations for organizations when using ChatGPT for customer analytics.

6. CONCLUSIONS

Customer analytics enable companies to make data-driven decisions, improve the customer experience and remain competitive in the dynamic market landscape. By better understanding their customers and tailoring their offerings to their specific needs, companies can drive customer loyalty, increase customer satisfaction and achieve long-term success. This study highlights the exciting opportunities ChatGPT offers to drive customer-centric strategies for digital businesses through insightful analysis and predictive capabilities. As a powerful AI tool, ChatGPT's ability to process and understand large volumes of text data underscores its value as a valuable tool for analyzing customer data and predictive analytics. The findings indicate that ChatGPT is a promising resource for companies looking to better understand their customers, customize their services and improve the overall customer experience. However, it is crucial to recognize that further research and development is needed to fully exploit the tool's capabilities and address any limitations.

The findings of this study provide valuable insights into the effectiveness and feasibility of using ChatGPT to drive customer-centric strategies in digital business. From an academic perspective, these results contribute to the growing literature on the integration of AI technologies in customer analytics and provide empirical evidence of the potential of ChatGPT to improve data processing, personalization and predictive capabilities. Furthermore, these findings pave the way for further exploration and use of not only ChatGPT, but also other AI-powered tools such as Google's Gemini, to revolutionize the way companies engage with their customers and foster stronger, more meaningful relationships in the digital landscape. Future research should explore the comparative effectiveness of different AI tools, their integration into existing business systems and the potential for synergistic applications to maximize their impact. In practice, the study highlights the transformative impact of ChatGPT on business practices and shows how AI can be used to improve customer satisfaction and loyalty through tailored and insightful interactions.

Despite the impressive NLP capabilities of

ChatGPT and its potential for analyzing customer data, some limitations should be noted. First, the study's small sample size of ten experts may not fully represent the diverse perspectives and expertise in customer analytics and ChatGPT. In addition, the results may not be readily applicable to all companies and industries, as different sectors have unique data characteristics and customer behaviors that may affect the performance of ChatGPT. For future studies, it is imperative to include a broader and more diverse range of experts from different industries, regions and job roles related to customer analytics and AI. This will enable a more holistic understanding of the potential and limitations of ChatGPT. In addition, combining qualitative insights with quantitative data can increase the rigor of the study. Researchers could conduct experiments with larger data sets and compare the performance of ChatGPT with traditional analysis methods and other AI models to verify its effectiveness. Finally, while ChatGPT can produce insightful analyzes, its accuracy in providing contextual information may vary, leading to potential errors in data interpretation. Future research should focus on mitigating bias and improving the explainability of the model to enable more accurate and reliable recommendations based on causality.

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APPENDIX

The questions used in the interviews are listed below:

- How do you utilise ChatGPT's NLP capabilities to process and analyse unstructured customer data such as survey responses, social media interactions, customer support logs, and product reviews, and what specific insights have you gained?
- In what ways has ChatGPT been effective in detecting emerging trends or issues by monitoring and analysing customer data over time, and how has it helped you proactively address concerns and capitalise on emerging trends?
- How does ChatGPT segment customers based on their behaviour, preferences, and other attributes, and how do you analyse sentiment across these segments to develop targeted marketing strategies and personalised offers?
- How do you use ChatGPT to build predictive models that forecast customer behaviour such as purchase intent, churn likelihood, and product preferences, and how have these models helped you make informed decisions?
- What role does ChatGPT play in personalising services and recommending relevant products or services based on predictive models, and what impact have these personalised recommendations had on customer satisfaction and loyalty?
- How do you ensure data privacy and security when using ChatGPT, and what practices have you implemented to stay up-to-date with industry standards?
- How has ChatGPT's analysis of customer preferences, interactions, and purchase history enabled personalised recommendations, and can you give examples of improved engagement and satisfaction?
- How have you integrated ChatGPT into your booking or reservation system to provide real-time personalised recommendations, and what impact have these had on enticing guests to return and enjoy a customised experience?
- How do you use ChatGPT to generate personalised financial product recommendations based on customers' needs and behaviour, and can you provide examples of how these suggestions have enhanced engagement and satisfaction?
- How has ChatGPT helped segment customers based on their attributes and behaviour, and how have these segments improved your marketing strategies and offerings?
- How does ChatGPT analyse guest data, such as booking history, preferences, and feedback, to effectively segment customers in the hospitality industry, and how have these segments improved guest satisfaction?
- How has ChatGPT identified high-value customer segments by analysing factors such as average order value, frequency of purchases, and customer lifetime value, and what strategies have you developed to engage and retain these customers?
- How do you use ChatGPT to perform sentiment analysis on customer feedback and social media data, and what insights have you gained to improve your business?
- Can you provide examples of how understanding customer sentiment through ChatGPT's analysis has led to actionable changes in your business?
- What improvements have you made to enhance customer satisfaction and loyalty based on sentiment analysis results from ChatGPT, and how do you present these results to your team for actionable steps?
- Note: Within the framework of this survey, it is pertinent to acknowledge that not every question is directed towards each participant. A deliberate exclusion of certain queries is executed to guarantee their applicability to particular respondents, thereby ensuring the relevance of the survey content to individual participants' experiences and contexts.

PREOBLIKOVANJE ANALITIKE KORISNIKA: OSNAŽIVANJE DIGITALNOG POSLO-VANJA PERSONALIZACIJOM VOĐENOM UMJETNOM INTELIGENCIJOM PUTEM CHATGPT-A

SAŽETAK

ChatGPT, napredni alat umjetne inteligencije (UI) koji je razvio OpenAI, ističe se u obradi prirodnog jezika (NLP) za razumijevanje i generiranje teksta. U eri brzog tehnološkog napretka, poduzeća neprestano traže inovativne načine za poboljšanje korisničkog iskustva i optimizaciju svojih strategija. Ovo istraživanje proučava potencijal ChatGPT-a u analizi korisničkih podataka i generiranju prediktivnih uvida za strategije usmjerene na korisnike u digitalnom poslovanju. Korištene su kvalitativne metode, a intervjui su provedeni s deset stručnjaka koji koriste ChatGPT za korisničku analitiku u Bangkoku, Tajland, pri čemu su sudionici odabrani namjernim uzorkovanjem. Prikupljeni podaci analizirani su pomoću analize sadržaja, alata Taguette i NVivo. Rezultati ističu uzbudljive mogućnosti koje ChatGPT nudi za razvoj strategija usmjerenih na korisnike kroz analitičke uvide i prediktivne sposobnosti. Ovo istraživanje otvara put daljnjem istraživanju alata temeljenih na umjetnoj inteligenciji kako bi se revolucionirala korisnička interakcija i osnažili digitalni odnosi. Sposobnost ChatGPT-a da obradi velike količine tekstualnih podataka čini ga vrijednim alatom za analizu korisničkih podataka i prediktivnu analitiku. Nalazi sugeriraju da je ChatGPT obećavajući resurs za poduzeća koja žele bolje razumjeti svoje korisnike, prilagoditi svoje usluge i povećati ukupno zadovoljstvo. Ipak, unatoč velikom potencijalu, potrebna su dodatna istraživanja i razvoj kako bi se maksimalno iskoristile mogućnosti i prevladala ograničenja.

KLJUČNE RIJEČI: *korisnička analitika, ChatGPT, umjetna inteligencija (UI), obrada prirodnog jezika (NLP)*