

# Co-creating with ChatGPT for tourism marketing materials

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## ABSTRACT

The launch of ChatGPT has the potential to disrupt conventional approaches to tourism marketing. In this context, the present research explores the distinguishability between marketing content created by ChatGPT and that by tourism marketers, while also comparing their respective effects on downstream tourism marketing outcomes. Drawing on two online experiments aligned with realistic destination marketing endeavors, the findings reveal that tourism marketing materials created by ChatGPT successfully pass the Turing Test and achieve textual fluency and perceived attractiveness that are no lower than those yielded by tourism marketers. This study provides preliminary experimental evidence showing the efficacy of applying generative AI like ChatGPT in creating tourism marketing materials, advocating a co-creation relationship between generative AI and tourism marketers.

## 1. Introduction

Machine Learning and Artificial Intelligence (AI) have undergone significant advancements, leading to the emergence of AI-generated Content as a prominent phenomenon (Tuomi, 2023). AI-generated Content encompasses a variety of multimodal content forms, including text, images, audio and video produced by generative AI systems that are powered by machine learning algorithms trained on extensive datasets (Campbell, Sands, Ferraro, Tsao, & Mavrommatis, 2020). The volume of AI-generated Content is expected to grow exponentially, with predictions suggesting it will account for over 10% of the total data stored in online databases in the next decade (McKinsey, 2022). This trend underscores a fundamental shift from Producer-Generated Content to User-Generated Content, and ultimately, to the prevalence of AI-generated Content (Campbell et al., 2020).

The debut of ChatGPT (Chat Generative Pre-trained Transformer), a generative conversational AI chatbot developed by OpenAI (2022), has created a whirlwind in the public and substantially promoted the notion of AI-generated Content. Within a mere five days following its launch, ChatGPT attracted one million active users, and within two months, it amassed 100 million users. This remarkable growth has allowed ChatGPT to surpass TikTok, making it the fastest-growing application in history (UBS, 2023). In its latest iteration, ChatGPT has been powered by the GPT-4 architecture and built with plugin functions, enabling it to interpret multimodal data and interact with up-to-date information

(OpenAI, 2023a, 2023b).

In stark contrast to earlier rule-based chatbots that were mainly deployed to manage structured and routine inquiries, ChatGPT, which is built upon the Transformer-based Large Language Model (LLM) (OpenAI, 2022), showcases the ability to decipher non-structured and intricate human requests while producing relevant and sophisticated content that emulates a human-like writing style. Such capabilities have elicited mixed feelings among users, with some expressing enthusiasm regarding their interactions with ChatGPT, while others express concern about its potential for unethical applications and the possibility of displacing human involvement in a multitude of text-related tasks and occupations. (Dwivedi et al., 2023; Haleem, Javaid, & Singh, 2022). For example, Hollywood scriptwriters have engaged in strikes and protests against the adoption of AI technologies that could replace their roles in writing scripts for movies and shows. Consequently, organizations across different industries are flocking to gauge the potential influence of ChatGPT on their business operations.

Tourism marketing, as widely acknowledged, comprises substantial text-based endeavors aimed at promoting travel destinations and pertinent tourism offerings. Such activities encompass creating tourist brochures, crafting social media posts, launching email marketing campaigns, producing advertising copies, and issuing press releases, among other tasks (George, 2021). Given the immense potential of generative AI in handling these text-centric tasks, tourism marketing professionals have also begun to contemplate the transformative impact

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that ChatGPT might exert on their work (see the conference reports on ITB Berlin 2023 by Skift (2023)). Concurrently, in academia, this has also spurred several novel research questions. As highlighted in state-of-art perspective articles (see Carvalho and Ivanov (2023) and Dwivedi et al. (2023)), emerging research questions regarding the impact of generative AI on tourism marketing urgently need to be explored.

In response to prevailing interests and concerns within both the industrial and academic spheres, the present article, in line with a pragmatism research paradigm, reports preliminary exploration results regarding the ramifications of ChatGPT on text works in tourism marketing practices. Specifically, this research aligns itself with the technological underpinnings of ChatGPT and consumer psychology literature, positing two research propositions. Firstly, a review of the features of generative conversational AI is conducted, leading to the proposition that tourism marketing content created by ChatGPT will be indiscernible from content crafted by human tourism marketers. Secondly, the study refers to the seminal processing fluency theory (Schwarz, 2004), postulating that ChatGPT possesses the capacity to create highly conceptually and semantically fluent marketing texts, thereby contributing to comparable or even superior tourism marketing performance.

The two research propositions were tested respectively through two online experiments, situated within the context of destination marketing endeavors in Norway. The results of the study indicate that individuals, regardless of their demographics and prior user experience, are virtually unable to distinguish between tourism marketing content created by ChatGPT and destination marketers. More significantly, the results reveal that ChatGPT-created content can yield identical semantic fluency and tourist evaluations toward the attractions in comparison with the current online promotional material.

This study yields a plethora of empirical insights. It furnishes one of the first experimental explorations demonstrating the indistinguishability of ChatGPT-created content within the tourism marketing domain, as well as the association between the utilization of ChatGPT, the marketing material quality as well as tourism marketing effectiveness. Such findings may suggest a dual impact of generative AI on current tourism marketing practices. On the positive side, the outcomes accentuate the value co-creation potential of generative AI, such as ChatGPT, in augmenting tourism marketing outcomes. On the challenging side, the study also brings up concerns about maintaining trustworthy marketing information and the possible transformation of the tourism marketing workforce due to the adoption of generative AI.

This paper is structured as follows: first, we outline the research context and propositions. Next, we present the research design and detail the methods and results of two empirical tests. We then discuss key empirical insights derived from these findings. Finally, we acknowledge the limitations and propose directions for future research.

## 2. Research context and proposition formation

### 2.1. Generative AI and tourism marketing

In recent years, AI has emerged as a transformative technological force for tourism marketing. The application of AI in marketing, in general, can be categorized based on multiple criteria, such as functionalities (e.g., Natural Language Processing, Computer Vision, Content Generation), degrees of automation (supervised, unsupervised, or hybrid), and specific use cases (e.g., customer service, content creation, market research) (Duan, Edwards, & Dwivedi, 2019). Among the myriad AI applications, generative conversational AI, namely AI-powered chatbots capable of interacting with users through natural language, has garnered considerable attention (Campbell et al., 2020). Recent tourism studies have begun to highlight the benefits of these AI applications in enhancing tourism marketing effectiveness (see systematic reviews on this topic by Verma, Sharma, Deb, and Maitra (2021) and Mariani, Perez-Vega, and Wirtz (2022)).

The foremost benefit of AI-galvanized chatbots is their capability to create marketing content at a high speed (Cheng & Jiang, 2022). As automated text-generation tools, these chatbots can swiftly respond to massive amounts of requests and prompts, enabling marketers to produce marketing materials much more efficiently than relying solely on human effort (Cheng & Jiang, 2022; Verma et al., 2021). As such, in the tourism sector, where timely marketing initiatives such as seasonal promotions and prompt guest inquiry responses are vital (Vogt, 2010), the increased speed and productivity enabled by AI-powered chatbots can be invaluable, which would help contribute to a more streamlined production of fresh marketing content that captures tourist interest (Calvaresi et al., 2021).

In addition to speed, AI-powered chatbots have already demonstrated high reliability and effectiveness in managing structured and routine marketing-related tasks (Davenport, Guha, Grewal, & Bressgott, 2020). Within the tourism marketing context, for instance, interactive AI-powered chatbots integrated into Online Travel Agencies (OTA) websites can address tourists' general inquiries regarding pricing, availability, itineraries, destinations, and touristic activities (Melian-González, Gutiérrez-Taño, & Bulchand-Gidumal, 2021). As noted by Pillai and Sivathanu (2020), for such structured tasks, chatbots are shown to be more accurate than human tourism marketers, with minimized risks of human error and bias. Also, from an operational perspective, linguistic chatbots have shown substantial benefits in assisting human tourism marketers with other functional marketing text-generation tasks, such as translating client messages, drafting emails, and refining the grammar of promotional materials (Doborjeh, Hemmington, Doborjeh, & Kasabov, 2022).

In addition to their efficiency and effectiveness, another notable advantage of AI-powered chatbots for tourism providers lies in their cost-effective nature (Cheng & Jiang, 2022), which diminishes tourism firms' reliance on the human labor force. Contrary to human tourism marketers, chatbots remain available 24/7 and 365 days per year, negating the need for salaries, breaks, sick days, or vacations (Ramesh & Chawla, 2022). Consequently, tourism organizations employing AI-powered chatbots can reduce the necessity to hire marketing personnel and subsequently reallocate the financial resources saved toward other marketing campaigns and general tourism business development initiatives (Calvaresi et al., 2021; Pillai & Sivathanu, 2020).

Despite the aforementioned advantages, previous chatbots are not without limitations. As identified in the existing literature, the most discussed concerns are "hallucination" or "artificial foolishness" (Vlačić, Corbo, Costa e Silva, & Dabić, 2021). That is, early chatbots were often constrained by their programming and might struggle to fully comprehend queries that deviated from their pre-programmed parameters. Consequently, substantial uncertainty and risks may arise when applying Chatbots to handle complex and nuanced requests, potentially resulting in inaccurate information, service failures, and customer frustration (Ramesh & Chawla, 2022). In addition to concerns regarding their accuracy, earlier chatbots have faced criticism for generating text that may lack the human touch, potentially leading to the creation of impersonal and non-human-like marketing content (Vlačić et al., 2021). Especially, in the hospitality and tourism industry, where both information accuracy and human touch are paramount (Vogt, 2010), such limitations of chatbots may have detrimental consequences on the tourist experience and tourism business performance.

### 2.2. ChatGPT as a "game-changer" in tourism marketing

Given the tradeoff between the pros and cons, traditional AI-powered chatbots have typically been employed merely for a certain range of business functions and often necessitate collaboration with human counterparts to address potential risks and shortcomings (Calvaresi et al., 2021; Pillai & Sivathanu, 2020). However, the advent of ChatGPT and similar generative AI, driven by advanced large language models,

have shown significantly fewer constraints in terms of artificial foolishness and emotional insensitivity. This development could potentially revolutionize the field of tourism marketing.

As attested by its initial users, ChatGPT has demonstrated a remarkable capability in addressing a vast array of user queries and requests while generating highly natural and even emotionally engaging responses, which were not often experienced with previous rule-based chatbots (Paul, Ueno, & Dennis, 2023). Beyond the self-reported user experiences, recent exploratory studies have also highlighted the effectiveness of ChatGPT in managing multiple formidable tasks previously thought to be beyond AI capabilities, such as the operational management test in the Wharton MBA program (see the test by Terwiesch (2023) and the law exam at the University of Minnesota Law School (see the test by Choi, Hickman, Monahan, and Schwarcz (2023)). Furthermore, the research conducted by OpenAI recently has demonstrated that GPT-4, the latest iteration of the model, can be highly competitive in standardized tests, including the Uniform Bar Exam, SAT, AP, GRE, etc., with results obtained being indistinguishable from those of a well-performing student (OpenAI, 2023b).

In the tourism marketing domain, whilst no prior research has explicitly examined the distinguishability between ChatGPT-generated marketing text and content generated by tourism marketing experts, the aforementioned user experiences and preliminary testing results in other domains have directed us to believe that ChatGPT already holds the promise for producing tourism marketing content indistinguishable from that created by skilled tourism marketing professionals. In this case, we would like to commence our study by scientifically evaluating the distinguishability of ChatGPT-generated text through a "Turing Test". Based on this objective, we can formulate our first research proposition as follows:

**Proposition 1.** Tourists cannot distinguish tourism marketing content created by ChatGPT from those created by tourism marketers.

### 2.3. Tourism marketing outcomes elicited by ChatGPT

Following the evaluation of general distinguishability, it becomes imperative to delve further into the actual effectiveness of using ChatGPT in promoting tourism marketing performance. In essence, several pieces of evidence derived from the technological foundation of ChatGPT suggest that it has the potential to yield comparable or even superior tourism marketing outcomes such as tourist evaluation and travel intention compared to that made by humans.

First, from an algorithm architecture perspective, ChatGPT differentiates itself from previous NLP models that relied on discriminant machine learning techniques such as K-means, decision trees, random forests, etc. Instead, it is built upon the unique Generative Pre-trained Transformer (GPT) model, a Large Language Model based on the transformer architecture introduced in the seminal work titled "Attention is All You Need" by Vaswani et al. (2017). Among all the features of the Transformer model, the most distinctive one is its incorporation of self-attention mechanisms and the elimination of the need for recurrent neural networks (Vaswani et al., 2017). In simpler terms, this mechanism allows the AI model to anticipate the subsequent word in a sentence and sequentially predict each following word, while continuously maintaining the coherence and contextual relevance of the entire text (Haleem et al., 2022). Consequently, it excels at optimizing parallel processing and managing long-range dependencies in the output.

While multiple AI companies have been working on their chatbots based on the Transformer model (e.g., BERT, T5), ChatGPT is the first one standing out, primarily due to its unique training process (for more details, see the explanatory chart from OpenAI (2022)). Simply put here, ChatGPT undergoes a 3-step training process to attain conversational proficiencies. Initially, during the unsupervised pre-training phase, the model is subjected to an extensive corpus of heterogeneous textual data, facilitating the acquisition of syntactic structures, factual information,

and rudimentary inferential capacities. Subsequently, in the supervised fine-tuning stage, the model is exposed to a more constrained dataset, which is generated via human AI trainers engaging in conversations while adhering to specified guidelines. This process enables the model to produce contextually pertinent, targeted, and secure responses. Lastly, user feedback constitutes an integral component of the iterative training procedure, allowing for continuous enhancement of the model's performance and behavior by refining the training data based on authentic user interactions.

Apart from the training process, both the training dataset and model parameters of ChatGPT are also substantial. GPT underwent pre-training on an expansive and diverse dataset that encompasses 26 languages, assimilating an array of online sources such as web pages, books, research articles, and social media content up until June 2021 (OpenAI, 2023b). This culminates in approximately 45 terabytes of textual data. Regarding model parameters, ChatGPT has progressed from its predecessor, GPT-3, which contained 175 billion parameters, to the current GPT-4 iteration, which purportedly encompasses over 100 trillion parameters. This augmentation in parameters is approaching the number of neurons present in the human brain, consequently enhancing the model's capacity to interpret highly intricate inquiries and generate contextually relevant, anthropomorphic responses.

Due to these advanced technological features, ChatGPT has demonstrated the ability to generate text that is natural, relevant, and coherent, as reported in recent explorative studies (Haleem et al., 2022). This suggests that when reading ChatGPT-generated text, individuals are less likely to encounter semantically nonsensical or misplaced content, as well as unrelated words, phrases, and sentences. Consequently, putting aside the factual correctness of the outputs, readers can often enjoy a highly smooth experience during the comprehension and perception process of the ChatGPT-generated text. From a consumer psychology perspective, such an experience of cognitive efficiency and seamless processing can be characterized as conceptual fluency (Whittlesea, 1993). By definition, conceptual fluency constitutes a subtype of processing fluency, originating from the strong congruence concerning concept collocations and corresponding linguistically relevant structures of the textual stimuli (Schwarz, 2004).

In terms of the downstream effect of conceptual fluency, higher conceptual fluency is generally hedonically marked (Berridge & Winikelman, 2003) and associated with more positive emotion (Schwarz, Jalbert, Noah, & Zhang, 2021). This rationale can be articulated from an evolutionary perspective: people inherently tend to favor interconnected items that are easier and faster to relate, as it usually indicates reduced danger, harm, and risk (Zajonc, 1968). Accordingly, as a result of the positive emotion evoked by conceptual fluency, elevated customer attitudes and judgments are more likely to be achieved. For instance, Song and Schwarz (2008) demonstrated that product descriptions with higher readability, as measured by simple sentence structure and clear language, resulted in more positive evaluations and increased purchase intentions. Likewise, Lee and Labroo (2004) showed that when consumers encounter advertisements or new brand introductions that include relatable and coherent stories, they are more likely to trust and connect with the brand on a deeper level. In the tourism marketing context, similarly, Tang and Jang (2014) found that processing fluency can positively moderate the original hedonic and utilitarian value embedded in promotional information.

Subsequent to the arguments presented, it is now plausible to delineate the following logical progression: when assigned identical textual marketing material composition tasks, ChatGPT, as opposed to tourism professionals who have circumscribed linguistic capacity in the domains of language memorization, retrieval, and association, has the potential to generate content exhibiting a high level of conceptual fluency. *Ceteris paribus*, this heightened conceptual fluency would function as an emotionally positive signal that further reinforces the appeal of the tourism products outlined in the text, ultimately resulting in positive tourist evaluation and tourism marketing outcomes. In light

of this rationale, the following research proposition can be posited for further investigation:

**Proposition 2.** ChatGPT-created content can yield tourism marketing outcomes that are comparable to, or even better than, those created by tourism marketers, the effect of which is mediated by the perceived conceptual fluency enabled by ChatGPT.

### 3. Research design

The testing of our propositions was operationalized in line with a critical realist research paradigm that emphasizes practical problem-solving and the generation of actionable insights. Specifically, we tested the two research propositions through two online experimental studies, each grounded in the realistic context of destination marketing in Norway.

In Study 1, we examined the first proposition with a Turing Test design. This process involved assessing the distinguishability between the original marketer-created texts posted by “Visit Norway” (Norway’s official Destination Management Organization) on their Instagram account and the counterpart versions created by ChatGPT.

Following this, Study 2 extended the investigation by evaluating tourists’ assessments of semantic fluency and perceived attractiveness across various versions of introductory texts for two Oslo-based museums. Specifically, the baseline text was the original version found on TripAdvisor. Regarding the ChatGPT versions, we created two distinct types: one where ChatGPT refined the original marketer-crafted text, and the other where ChatGPT was employed to generate entirely new texts. To enrich our analysis, we also experimented with both short and long versions of these texts. The following sections detail the testing procedures and present the results.

## 4. Study 1: Turing test

### 4.1. Methods

In study 1, we put ChatGPT-created content in the “Turing Test” using a non-inferiority trial design. That is, we hypothesized that the probability for potential tourists to correctly identify ChatGPT-generated text would not be significantly higher than that of flipping a coin. To operationalize the testing, we randomly selected ten posts from the Instagram account of “Visit Norway” out of its latest 100 posts, each consisting of a photograph of a tourist attraction or activity as well as an accompanying short introductory paragraph. We then used prompts to direct ChatGPT to generate ten counterparts’ texts with similar word counts (refer to Appendix A for details). Although the word counts of the ChatGPT-produced outputs did not consistently match the original texts (exhibiting variations between 1 and 13 words), no alterations were made to the ChatGPT-generated outputs in order to maintain external validity.

We then presented the ten posts, each with two sets of texts (one generated by the tourism marketers and the other by ChatGPT), to a sample recruited from Amazon Mechanical Turk (MTurk) and offered a small monetary incentive. We selected those people who understand English and who have conducted more than 50 Human Intelligence Tasks (HITs) with an approval rate greater than 95% as participant criteria. The order of answer options for each question was randomized, and participants were instructed to read the full texts and identify which one was generated by ChatGPT. Quality control tools using timer and Captcha were included during the test. After the 10 questions, participants were asked to report whether they had ever used ChatGPT (Yes/No) and provide demographic information, including physical sex and age.

For data preprocessing, we excluded unqualified data, coded outcomes as binary (1: correctly identified ChatGPT; 0: otherwise), and transformed the dataset into the long format. For the main analysis, we

adopted R (packages: “table1”; “flextable”; “miceadds”; “Epi” and “lme4”) and set an inferiority margin of 55% based on the rule of thumb of 85% power in 100 cases (D’Agostino Sr, Massaro, & Sullivan, 2003). To calculate the probability of accurately identifying ChatGPT-created posts, we followed the approach outlined by Hulman et al. (2023) and conducted question-level logistic regression. The logistic regression model was estimated with the Robust Variance Estimation (RVE) method and included participant-level clustering to account for within-subject correlation of responses. After estimating the model, we transformed the coefficients, which were expressed as log-odds along with their 95% confidence intervals (CI), into probabilities. These probabilities represent the likelihood of correctly identifying ChatGPT-generated responses. To gain deeper understanding, we also conducted subgroup analysis by gender, age and previous using status.

### 4.2. Results of Study 1

After excluding participants who failed the quality control, data from 229 respondents (45% female, average age 35.7 years, 91.7% reported using ChatGPT) were included in the logistic regression analysis.

The overall estimated probability of accurately identifying ChatGPT-generated content was 54.98% (95% CI: 52.95, 56.99), which falls within the pre-defined non-inferiority margin of 55%. Subgroup analyses indicated minor differences between groups, with estimated probabilities for most participant characteristics lying within or near this non-inferiority zone. Specifically, the estimated probability was 53.10% (95% CI: 50.03, 56.15) for males and 56.51% (95% CI: 53.83, 59.14) for females. For participants reporting ChatGPT usage, the estimated probability was 55.38% (95% CI: 53.23, 57.53), compared to 50.52% (95% CI: 44.79, 56.25) for non-users. Additionally, the estimated probabilities were 56.8% (95% CI: 52.99, 60.52) for the 18–29 age group, 55.08% (95% CI: 52.11, 58.01) for the 30–39 age group, 51.43% (95% CI: 46.53, 56.30) for the 40–49 age group, and 50.4% (95% CI: 49.83, 61.59) for those aged 50 and above. These logistic regression results are visually presented in Fig. 1.

To sum up, the outcomes of Study 1 demonstrated that the probabilities of the research participants accurately identifying ChatGPT-created Instagram posts were not significantly higher than that of flipping a coin. While there were minor differences in the sub-group analysis, the results show that such an inability to differentiate between tourism marketing professionals- and ChatGPT-generated content was generally consistent across various age and gender groups, as well as for participants with or without prior experience using ChatGPT.

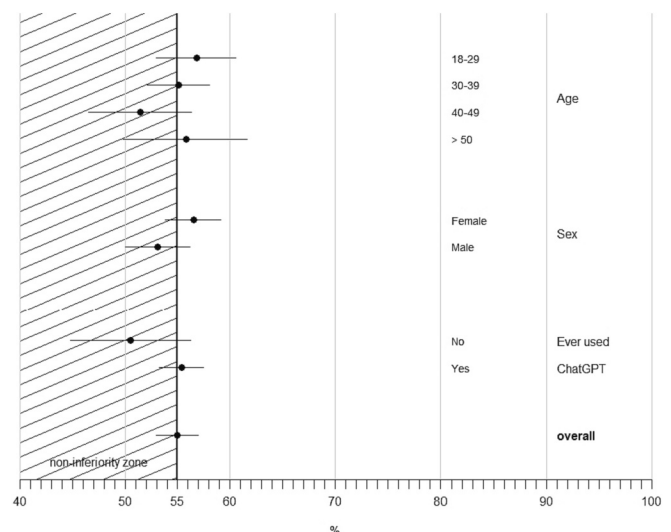


Fig. 1. Turing test results.



Consequently, we can conclude that ChatGPT successfully passed our “Turing Test” in the domain of tourism marketing text evaluation, providing support for our first proposition.

## 5. Study 2: Comparison of marketing outcomes

### 5.1. Methods

In Study 2, we executed a 3 (text source: human-generated vs. ChatGPT-refined vs. ChatGPT-created) by 2 (text length: short vs. long) scenario-based between-subjects online experiment, intending to explore the tourism marketing outcomes led by distinct versions of tourism marketing material. The experimental stimuli were derived from the current in-use introductory texts on TripAdvisor for two Oslo-based museums: Norsk Folkemuseum (short version: 86 words) and Fram Museum (long version: 166 words). For the ChatGPT-created conditions, we utilized prompts to generate both ChatGPT-refined and ChatGPT-generated content with equivalent word counts (refer to Appendix B for details).

In the experiment, participants were instructed to complete a task evaluating the introductory text for two museums in Oslo. To ensure that participants thoroughly read the texts, we implemented quality check measures like in Study 1. In terms of measurements, we assessed participants' evaluative attitudes toward the attractions after exposure to the promotional text (item: “According to the promotion text you just read, how attractive do you find this museum?”, scale 1 (extremely unattractive) - 7 (extremely attractive), [Driscoll, Lawson, and Niven \(1994\)](#)). Additionally, we measured the proposed underlying mechanism, namely, tourist perceived conceptual fluency (item: “How do you perceive the introductory texts you were reading?”, scale 1 (extremely disfluent) - 7 (extremely fluent), [Graf, Mayer, and Landwehr \(2018\)](#)). After that, participants' demographic data, including physical sex and age, were collected.

As for data collection, we recruited MTurk participants through a small monetary incentive and randomly assigned them to one of six experimental conditions. Similar to Study 1, participant selection criteria included people who understand English, with completion of over 50 HITs, and an approval rate exceeding 95%. Regarding data analysis, we conducted a multivariate analysis of variance (MANOVA) analysis to demonstrate marketing outcomes by the group for both short- and long-text versions. We also planned to apply PROCESS for R (Model 4) to examine the indirect effects of conceptual fluency between different text sources and their direct effect on the perceived attractiveness of the museums.

### 5.2. Results of Study 2

After excluding participants who failed the attention check, our final MANOVA included data from 314 respondents (40.4% female, with a mean age of 34.73 years). Box's Test of Equality of Covariance Matrices revealed significant differences in covariance matrices across groups (Box's  $M = 41.813$ ,  $F(15, 453,998.160) = 2.741$ ,  $p < .001$ ), indicating variations in group variance. Consequently, Pillai's Trace was employed as the robust measure for the difference test ([O'Brien & Kaiser, 1985](#)). The Levene's Test results indicate that for both Attractiveness and Fluency, there is no statistically significant difference in error variances across groups, suggesting that the assumption of homogeneity of variances is met for these variables.

As for the results, multivariate tests revealed no significant main effects of the case (text versions) on the combined dependent variables (Pillai's Trace = 0.006,  $F(4, 616) = 0.453$ ,  $p = .770$ , Partial Eta Squared = 0.003). Similarly, no significant effects were found for text length (Pillai's Trace = 0.003,  $F(2, 307) = 0.497$ ,  $p = .609$ , Partial Eta Squared = 0.003). The interaction effect between case and length was also non-significant (Pillai's Trace = 0.018,  $F(4, 616) = 1.424$ ,  $p = .225$ , Partial Eta Squared = 0.009). Due to these non-significant results, post-hoc

comparisons and mediation tests were not conducted. In summary, the MANOVA analysis revealed that the variations in the marketing text (Original, ChatGPT-refined, and ChatGPT-created) and the length of the text (Short and Long) did not significantly influence the perceived fluency and attractiveness of the destination. These results are visually depicted in [Fig. 2](#) and [Fig. 3](#).

Finally, Study 2 indicates that marketing materials refined and created by ChatGPT exhibit a semantic quality and downstream marketing effectiveness virtually comparable to the marketing materials currently in use by two Norwegian museums on TripAdvisor. This implies a potential co-creation role for ChatGPT in the generation of tourism marketing texts. Such findings lend partial support to [Proposition 2](#), highlighting the effectiveness of ChatGPT in producing marketing content of comparable quality and impact on marketing outcomes.

## 6. Discussion and conclusion

### 6.1. Discussion of the results

This research investigates several key issues related to the application of ChatGPT in the tourism marketing arena. Specifically, our first empirical study provides preliminary evidence in the tourism marketing context indicating that potential tourists, regardless of their demographic attributes and prior user experience, are unable to effectively differentiate between ChatGPT-created posts and tourism marketing professionals-created posts. Whilst recent research has shown that knowledgeable users may occasionally distinguish between ChatGPT-generated advice and expert advice in certain domains such as medical services ([Hulman et al., 2023](#)), our findings demonstrate that the updated GPT-4 model has already been sufficiently trained with tourism-destination-specific knowledge and is capable of engendering contextually relevant and indistinguishable tourism marketing texts, at least in English. This finding corroborates the notion that generative AI has the potential for broader adoption in tourism marketing content-generation tasks ([Carvalho & Ivanov, 2023](#); [Haleem et al., 2022](#)).

Our second empirical study builds upon the findings of Study 1 and further investigates the downstream marketing outcomes of three text sources: the original DMO-posted text, ChatGPT-refined text, and ChatGPT-created text. This investigation also encompasses both short and long textual variations. The results demonstrate that, even with very generalized and straightforward ChatGPT prompts, both ChatGPT-refined and ChatGPT-created texts can elicit an identical level of semantic fluency as well as downstream appeal for the attractions in comparison to the currently available online content. This finding offers one of the first empirical pieces of evidence supporting an association between the direct application of AI-powered chatbots in tourism marketing endeavors and comparable tourism marketing outcomes. Consequently, it substantiates recent propositions by [Dwivedi et al. \(2023\)](#) and [Paul et al. \(2023\)](#) suggesting that large language models like ChatGPT have the potential to collaborate with, or in some instances, replace certain functions of tourism marketers in producing effective marketing materials. This, ultimately, highlights the evolving role of AI in enhancing or substituting routine marketing tasks within the tourism industry ([Campbell et al., 2020](#)).

In a nutshell, building upon the findings of the two empirical explorations, the potential of generative AI like ChatGPT to serve as a transformative value co-creator is supported, which echoes the recent propositions from [Demir and Demir \(2023\)](#) and [Fui-Hoon Nah, Zheng, Cai, Siau, and Chen \(2023\)](#). Theoretically, the findings implicate that generative AI, as a technology, not only reacts as a tool to enhance marketing effectiveness but also as an active agent in the interactive value-creation processes. This revelation prompts further investigation into broader value co-creation paradigms and the dynamics of AI-customer interactions ([Pentina, Xie, Hancock, & Bailey, 2023](#); [Zhang, 2023](#)). Based on our findings, the following section aims to discuss critical empirical insights into the effects of generative AI like ChatGPT

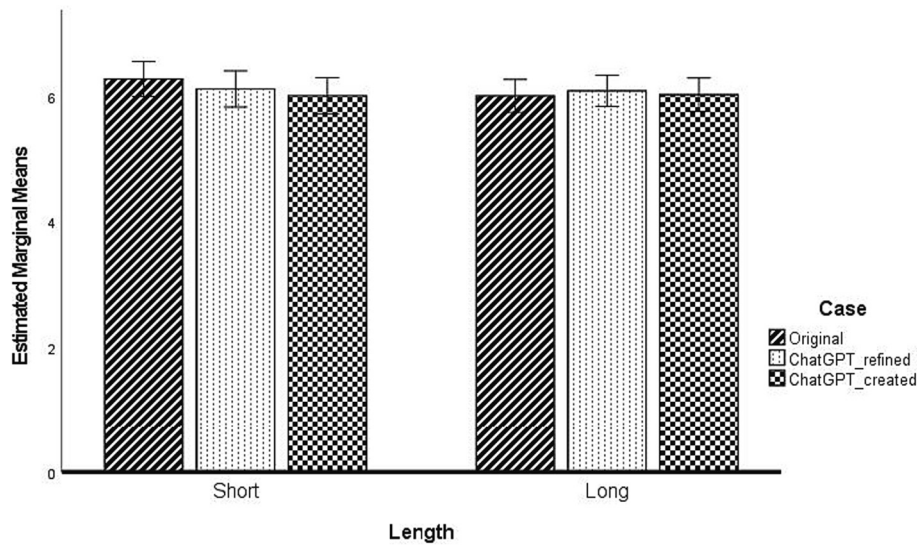


Fig. 2. Estimated marginal means of attractiveness.

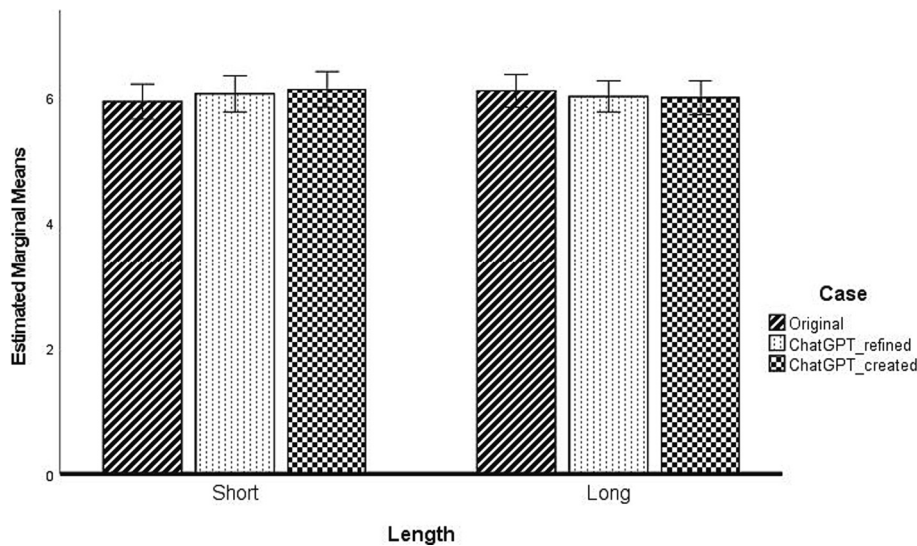


Fig. 3. Estimated marginal means of conceptual fluency.

on tourism marketing practices and management, addressing both the opportunities and challenges.

## 6.2. Empirical insights

### 6.2.1. Opportunities of applying generative AI in tourism marketing

The foremost opportunity of employing generative AI in tourism marketing lies in its ability to enhance productivity, particularly in routine marketing content generation tasks. As illustrated in our study, generative AI can efficiently automate standard marketing tasks like drafting introductions of attractions and composing preliminary social media content. Crucially, such outputs generated by ChatGPT can remain indistinguishable from tourists, bearing no notable qualitative discrepancy from the human-created marketing text. As such, considering the rapid processing capabilities of generative AI, we underscore the opportunity to treat generative AI as a valuable tool in making routine marketing operations more productive.

Beyond enhancing productivity, our study also reveals that generative AI is capable of producing text with comparable quality in terms of

readability, semantic fluency, and content relevance, particularly in English contexts. This level of text quality can result in marketing effectiveness similar to that achieved by human tourism marketers. Consequently, we can advise that, in marketing scenarios that demand significant semantic coherence, generative AI can serve as a useful tool for refining language, provided that the underlying factual marketing information is accurate. This suggests its potential utility in crafting marketing content with high semantic precision.

Finally, in light of the demonstrated marketing effectiveness of generative AI, as evidenced by our study, we advocate a paradigm shift among tourism marketing professionals. This shift involves positioning generative AI as a pivotal co-creator of value. Specifically, for tourism marketing specialists, we recommend adapting their routine marketing tasks to actively pursue co-creation opportunities with generative AI systems. For tourism marketing managers and directors, we suggest a proactive approach in considering the integration of generative AI. This approach should include providing comprehensive training in effective AI prompting techniques, thereby ensuring optimal utilization of these innovative systems.

### 6.2.2. Challenges of applying generative AI in Tourism Marketing

Given the potential of generative AI in tourism marketing, several challenges can also be inferred based on our findings. First, although generative AI can match the performance of average marketers, its ability to surpass the most skilled professionals in the field remains uncertain. Especially, it should be noted that our study focused primarily on generating short texts and handling routine tasks, such as content creation for Instagram posts and introductory texts for destination sites in English. Consequently, the demonstrated efficacy of generative AI may not extend to more complex marketing queries.

Secondly and interestingly, in our language refinement test, we observed that ChatGPT ensures a very high level of grammatical accuracy and fluency. However, it is crucial to note that such fluency does not necessarily translate into increased creativity or improved marketing outcomes. In marketing, where occasional semantic disfluency might be key for establishing credibility and customer engagement, ChatGPT's effectiveness in meeting these nuanced requirements may require further investigation and fine-tuning.

Further, the difficulty tourists face in distinguishing between AI-generated and human-produced text could lead to issues of misinformation and challenges in establishing trust (Tuomi, 2021). On the marketers' side, this indistinguishability may pose risks associated with an over-reliance on generative AI. Specifically, marketers might incorrectly assume that customers are unable to differentiate between AI-generated and human-created content, potentially leading to an inadequate review of such materials. On the tourists' side, awareness of this indistinguishability might result in increased caution in an AI-driven marketing era, thereby raising the threshold for establishing trust. Consequently, there is a heightened need for marketers to develop and disseminate trustworthy information to counter misinformation and build customer trust.

Lastly, at a broader socio-economic level, the productivity gains and potential cost savings offered by AI pose significant challenges to the tourism marketing workforce. A critical question arises: is the same workforce size necessary as before? While our research supports the effectiveness of AI in performing basic textual tasks, we recommend a cautious approach to workforce restructuring. This is to avoid complex social consequences, such as potential layoffs of human tourism marketers who may not perform as well as AI systems. It is essential to balance the benefits of AI integration with the potential impacts on employment within the tourism marketing sector.

### 6.3. Limitation and future research

We acknowledge several unavoidable limitations in this research, with the hope of paving the way for future tourism marketing research with the trend of generative AI. First, it should be noted that our tests are operationalized with a scenario-based online experiment design. While this approach establishes plausible internal validity and optimizes research feasibility, caution should be exercised when considering its generalizability in actual practices. For future studies, it is therefore recommended to collect marketing data and conduct field experiments with tourism businesses to generalize the capability of generative AI in realistic tourism marketing contexts.

Second, our empirical analysis principally focuses on the text production for generic tourism marketing materials, specifically centered on Norwegian destinations and attractions. However, it is crucial to recognize the versatility of ChatGPT and similar generative AI, showcasing proficiency in more complex textual and non-textual tasks, such as curating creative marketing ideas, promotional images, and even

videos. Future research could potentially broaden the exploration domain, evaluating the marketing efficacy of AI-powered tools across a more diverse and detailed array of application scenarios.

Third, in our study, while creating the instrument, we mainly utilized a concise and straightforward ChatGPT prompt to generate AI counterparts. Given the increasingly proven efficacy of generative AI in numerous fields, the future trend, as we suppose, should move toward comparing multiple versions of specifically crafted prompts. That said, future tourism marketing researchers may need to function more like "AI prompt engineers", investigating best practices for designing and crafting AI prompts to achieve optimal marketing outcomes.

Fourth, our study only focuses on tourists as the unit of analysis. However, given the advanced capabilities of AI-powered chatbots, broader transformative impacts are foreseeable. Thus, we advocate for the exploration of varied units of analysis through diverse research designs. For instance, conducting observations and interviews with tourism marketing professionals could offer profound insights into the impact on organizational practices, encapsulating facets such as recruitment criteria, workforce training, as well as other human resource management topics.

Finally, as an endnote, throughout the process of our empirical testing, the ChatGPT model underwent significant advancements, transitioning from GPT-3.5 to GPT-4, and acquiring the ability to incorporate plugins. Given such an ever-changing manner of advancement, we feel a sense of unsettlement. As such, we highly encourage conceptual discussions about the profound paradigm shift caused by generative AI in the tourism marketing realm. That said, tourism marketing researchers must actively and closely examine how to co-create with generative AI. This entails not only harnessing AI's potential for enhancing marketing outcomes but also comprehending its ramifications concerning ethical considerations, workforce evolution, and long-term alterations to operational procedures and workflows concerning tourism marketing.

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.annale.2024.100124>.

### Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used ChatGPT in order to create research instruments. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

### CRediT authorship contribution statement

**Yaozhi Zhang:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Data curation. **Nina Katrine Prebensen:** Writing – review & editing, Supervision.

### Declaration of competing interest

The researchers involved in this study declare no conflict of interest.

### Data availability

All testing material, codes and raw data are publicly available on the Open Science Framework: [https://osf.io/723he/?view\\_only=ac5489f1b140419f993af465cbbaba7b](https://osf.io/723he/?view_only=ac5489f1b140419f993af465cbbaba7b)

## Appendix A

Study 1 entailed a random selection of 10 distinct posts from the recent 100 non-video posts on the “Visit Norway” Instagram account (<https://www.instagram.com/visitnorway>). These chosen posts, encompassing both an image and the primary textual content, were subsequently extracted and consolidated in Table A. The ChatGPT prompt formulated as “create a xxx-word Instagram post for the (name of attraction), (with emojis)” was used to generate ChatGPT-created counterparts. Five distinct prompts were devised for each post to guarantee diversity, with one being chosen at random. Each prompt was generated within a separate ChatGPT session to preclude potential information leakage. Fig. A visualizes the process of preparing the testing materials mentioned above, and Table A provides a comprehensive overview of the instruments employed in the study.

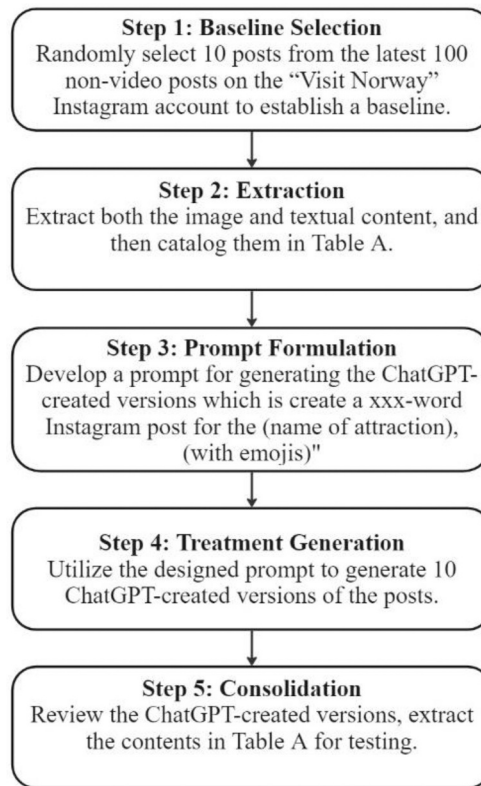


Fig. A. Instrument generation process for Study 1.



Table A  
Instruments for Study 1.

Post	DMO-posted	ChatGPT-created	Prompt
	<p>Stave Churches are part of our most significant and treasured cultural heritage.</p> <p>📍 Thanks to the Vikings' interest in boat construction and home building, the technique, and tradition of wood carving was further developed. The work culminated in the stave churches.</p> <p>🏡 There are several types of stave churches, but what they all have in common are corner-posts ("staves") and a framework of timber with wall planks standing on sills. These walls are known as stave walls, hence the name stave church.</p> <p>📖 Researchers believe that there have been just under 2 000 stave churches in Norway. 28 of these are preserved.</p> <p>🏠 Explore Norway's stave churches.</p>	<p>If you're visiting Norway, don't miss out on the chance to see some stunning Stave Churches! These historic structures date back to the Middle Ages and are made entirely out of wood, featuring intricate carvings and unique architectural styles.</p> <p>The churches were originally built by Vikings who converted to Christianity, and many of them still serve as places of worship today. You'll find Stave Churches nestled in some of Norway's most beautiful natural settings, surrounded by towering trees and snow-capped mountains.</p> <p>Whether you're a history buff, an architecture enthusiast, or just looking for a peaceful place to reflect, a visit to a Stave Church is a must. Don't forget to snap some photos to share on Instagram!</p> <p>📷 📍</p>	<p>Create a 105-word Instagram post for Stave Churches in Norway, with emojis.</p>
	<p>Spend the night in a cone and wake up in the middle of the treetops on Mount Fløyen. In between the trees, "Konglen" – The Cone – is pending a few meters above the ground.</p>	<p>Looking for a unique and unforgettable travel experience? Spend the night in a cozy cone atop Mount Fløyen, surrounded by stunning views of Norway's natural beauty.</p>	<p>Create a 33-word Instagram post for Spend the night in a cone on Mount Fløyen.</p>
	<p>LAVVO - the Sami tent – which has always been a symbol of their nomadic culture. Almost like a tent, but smarter and better adapted to the weather. It is traditionally used as a temporary stay while traveling, but also used for more permanent residence. Today it's mostly used as a place to gather around a fireplace, or to camp in.</p>	<p>Step into the world of the Sami people with LAVVO! Our authentic Sami tents provide a unique and unforgettable experience for any outdoor enthusiast. Whether you're camping in the mountains or exploring the forests, LAVVO offers shelter, warmth, and a touch of culture. Immerse yourself in the beauty of nature with LAVVO</p>	<p>Create a 60-word Instagram post for LAVVO - the Sami tent.</p>

	<p>Do you love knitting? Then you have something in common with the people of Selbu! The Selbu mitten is a traditional Norwegian mitten, with a specific pattern made from sustainable wool. The tradition dates back to 1850, and has a rich history. 🧶🧶🧶 Learn the story behind Selbu's famous icon, Selbu mittens. 🧢</p>	<p>Welcome to the world of Selbu Knitting! This traditional craft is more than just a hobby - it's a vital part of Selbu's culture and heritage. From cozy mittens to intricate sweaters, every piece tells a story of this tight-knit community. Join us in celebrating the artistry and skill of Selbu knitters! 🧶🧶🧶</p>	<p>Create a 60-word Instagram post for Selbu Knitting, with emojis.</p>
	<p>Woof! Woof! Happy sled dogs with wagging tails do what they love the most: run! Find your next dog sled adventure in Norway!</p>	<p>Experience the thrill of gliding through Norway's snowy landscapes with our dog sled tours. Book now and make unforgettable memories with our friendly huskies!</p>	<p>Create a 24-word Instagram post for Dog Sled in Norway.</p>
	<p>Enjoy the space and serenity at your own pace and set out on adventures into the unknown. As we would say: Go Viking in the fjords 🐉🌿🌿🌿 It's raw, rough, and full of contrasts. It's the time of year when Fjord Norway shows its mystical and magical self. Autumn, winter, and spring are what we call the Viking season. 🍂 Find your Fjord Norway</p>	<p>Introducing the stunning Norwegian fjords! 🌊 These breathtaking natural wonders boast majestic mountains, crystal clear waters, and lush green forests. 🌲🌲🌲 Whether you're cruising on a boat, hiking along the trails, or simply soaking up the sun, the fjords offer an unforgettable experience. 🚢🌅🌅 So why not add Norway to your travel bucket list?</p>	<p>Create a 67-word Instagram post for Norwegian Fjord, with emojis.</p>
	<p>Greetings from Trondheim 🇳🇴🇳🇴🇳🇴 With dedicated chefs and incredible locally produced ingredients, Trondheim has developed into a gastronomic hotspot. Chef Live Krangnes Edvardsen, a talented young chef at the Michelin-starred restaurant Credo, gives you a taste of the European Region of Gastronomy 2022.</p>	<p>🇳🇴 Trondheim, Norway just got named European Region of Gastronomy 2023! 🍴 Indulge in the city's unique culinary scene, from traditional fish dishes to innovative cuisine. NO Can't wait to explore the delicious food in Trondheim! 🍷 #Trondheim #FoodieHeaven 🌟</p>	<p>Create a 43-word Instagram post for Trondheim as European Region of Gastronomy, with emojis,</p>

	<p>“Den Gyldne Omvei” ★ The Golden Road on two wheels.</p> <p>About two hours north of Trondheim, just off the E6 motorway to Bodø, you can experience The Golden Road detour and explore the idyllic Inderøy peninsula by bike or by car!</p> <p>Cycling among soft rolling hills in the countryside is fantastic 🚲 🚲 🚲</p> <p>Being on The Golden Road, you find yourself in one of Norway's leading regions for locally produced food.</p> <p>This is your golden opportunity ★</p>	<p>Take a detour on your next road trip and experience the stunning beauty of Norway's Golden Road! 🚗 🚗 The E6 motorway leads to the coastal city of Bodø, but don't miss out on the scenic route along the Golden Road. Winding through majestic mountains and along the fjords, this drive is a feast for the eyes. Stop at lookout points to capture the breathtaking views and take a break at cozy cafes and restaurants. Trust us, this detour is worth the extra miles. #GoldenRoad #E6 #Bodø #Norway #RoadTrip #ScenicDrive #NatureLovers #TravelGoals 📸: @travel_norway"</p>	<p>Create a 76-word Instagram post for Golden Road detour on E6 motorway to Bodø, Norway</p>
	<p>Let's go North! 🚂 🚂 Experience the Nordland Railway - The Arctic Circle Express from Trondheim to Bodø! Cross 293 bridges, travel through 154 tunnels, Norway's longest continuous train line is quite a journey 🤩</p> <p>🌍 Taking you across the Arctic Circle, where you can experience the northern lights and the midnight sun</p> <p>🔊 You will now hear a message over the loudspeakers as the train crosses the magical Arctic Circle. You're officially entering the kingdom of the midnight sun. "Get your camera ready if you want to take pictures of the stone pyramids beside the railway that mark the Arctic Circle. You can also see the visitor centre, the Arctic Circle Center, from the right side of the train."</p>	<p>🚂 All aboard the Nordland Railway! 🌍</p> <p>Embark on a scenic journey from Trondheim to Bodø and take in the stunning views of Norway's rugged coastline. 🏞️ 🏞️</p> <p>With comfortable trains and breathtaking scenery, this trip is an experience you won't forget! 📸 📸</p> <p>Relax and enjoy the ride as you pass by picturesque villages, rolling hills, and dramatic fjords. 🏞️ 🏞️</p> <p>So why wait? Book your trip on the Nordland Railway today and get ready for an unforgettable adventure! 🚂 🚂</p> <p>#NordlandRailway #TrondheimToBodø #ScenicJourney #Norway #TravelGoals 🌟</p>	<p>Create a 118-word Instagram post for Nordland Railway from Trondheim to Bodø, with emojis.</p>
	<p>🚂 The Flåm Railway ride is beautiful all year round! 🤩 All aboard! Check out for more Norwegian train journeys 🚂!</p>	<p>🚂 All aboard the Flåm Railway! 🏞️ Enjoy breathtaking views of Norway's fjords and mountains on this unforgettable journey.</p>	<p>Create a 21-word Instagram post for the Flåm Railway ride with emojis.</p>

## Appendix B

In Study 2, we used two introductory texts currently on TripAdvisor for two museums located in Oslo, Norway, as our baselines. These were the “Norsk Folkemuseum ([https://www.tripadvisor.com/Attraction\\_Review-g190479-d246066-Reviews-Norsk\\_Folkemuseum-Oslo\\_Eastern\\_Norway.html](https://www.tripadvisor.com/Attraction_Review-g190479-d246066-Reviews-Norsk_Folkemuseum-Oslo_Eastern_Norway.html))” and the “Fram Museum ([https://www.tripadvisor.com/Attraction\\_Review-g190479-d656587-Reviews-Fram\\_Museum-Oslo\\_Eastern\\_Norway.html](https://www.tripadvisor.com/Attraction_Review-g190479-d656587-Reviews-Fram_Museum-Oslo_Eastern_Norway.html))”.

Subsequently, we employed ChatGPT prompts, specifically “refine the following text:” and “generate a xxx-word introductory text for the (name of the attraction)”, to produce five distinct ChatGPT-refined and ChatGPT-created versions for each museum. Following this process, we randomly selected one generated version for inclusion in our test. We conducted proofreading of all text variants and discovered no factual inaccuracies; thus, all texts utilized in the experiment remained unaltered to preserve external validity. Fig. B visualizes the process of preparing the testing materials mentioned above, and the research instruments employed in this study are delineated in Table B below.

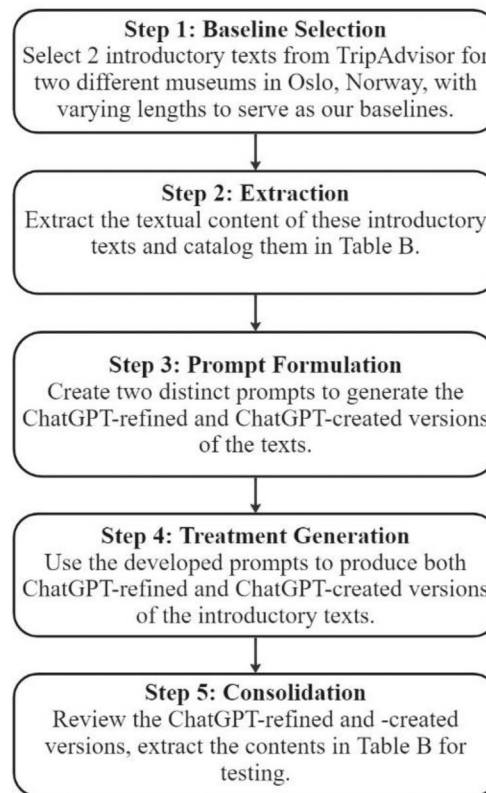


Fig. B. Instrument generation process for Study 2.

Table B  
Instruments for Study 2.

Length	Original (baseline from Tripadvisor)	ChatGPT-refined	ChatGPT-created
Short	Norsk Folkemuseum shows how people lived in Norway from 1500 to the present through its collections from around the country. Among the highlights are the Stave Church from Gol, dating from 1200 and an apartment building with homes from the 20th Century. 160 historic buildings in the big Open-Air Museum represent different regions in Norway, different time periods, as well as differences between town and country, and social classes. Indoor exhibits present Norwegian heritage. The museum has a comprehensive activity program and is open all year.	The Norsk Folkemuseum presents the history of Norwegian life from 1500 to the present day through its nationwide collections. Notable attractions include the 1200-year-old Stave Church from Gol and a 20th-century apartment building. The museum's 160 historic structures in the open-air exhibit showcase Norway's diverse regions, time periods, urban-rural divide, and social classes. Visitors can also experience indoor displays showcasing Norwegian heritage. With a full schedule of activities and year-round accessibility, the museum offers a comprehensive experience.	Welcome to the enthralling Norsk Folkemuseum, your gateway to Norway's rich cultural past. Venture through our open-air museum, home to over 160 historic buildings, and explore a vivid indoor exhibit. Traverse time, from medieval stave churches to 19th-century farmsteads, and embrace Norway's diverse regional heritage. Witness traditional craftsmanship, folk art, and colorful costumes. Engage in lively folk performances and interactive activities for all ages. At the Norsk Folkemuseum, history comes alive, connecting generations and honoring the essence of Norwegian culture. Don't miss this captivating experience.
Long	A number of new attractions were available for the visitors at the Fram Museum, the highlight being the continuous 270 degrees surround film shown from the deck of Fram. The Fram Museum is located at Bygdøy, a short distance from the centre of Oslo and is easily reached by bus or, in the summer season, by ferry from the City Hall quayside. We focus on polar history, our centerpiece being FRAM, the strongest wooden polar ship ever, dating from 1893. Our closest neighbours are the Kon-Tiki Museum and the Norwegian Maritime Museum. The Viking Ship Museum and the Norwegian Folk Museum are within 15 min walk. The Bygdøy peninsula is therefore popularly known as the museum peninsula. Bygdøy is one of Oslo's main places to go. The main exhibition in the Fram building has explanatory texts in ten languages and describes the three great Fram expeditions. We have exclusive polar souvenirs in our shop and probably the world's biggest polar book store with 220 different titles.	The Fram Museum, located at Bygdøy, a short distance from the center of Oslo, offers a range of new attractions for visitors, with the highlight being a continuous 270-degree surround film shown from the deck of the famous Fram ship. The museum, which is easily accessible by bus or ferry in the summer, focuses on polar history, with the Fram ship as its centerpiece. The ship, built in 1893, is the strongest wooden polar ship ever built. The museum is located near other popular attractions, such as the Kon-Tiki Museum, Norwegian Maritime Museum, Viking Ship Museum, and Norwegian Folk Museum, making the Bygdøy peninsula a popular destination for museum-goers. The main exhibition in the museum features explanatory texts in ten languages and highlights the three famous Fram expeditions. Additionally, the museum shop offers exclusive polar souvenirs and the world's largest polar book store, with over 220 different titles.	Welcome to the enchanting world of the Fram Museum, an extraordinary destination situated in the heart of Oslo, Norway. This awe-inspiring museum whisks you away to a bygone era of intrepid polar exploration, celebrating the unyielding spirit of adventure and discovery. Enter a realm of ice and snow, where the legendary ship Fram resides – the world's most formidable polar vessel. Commanded by renowned explorers Fridtjof Nansen, Otto Sverdrup, and Roald Amundsen, the Fram ventured further north and south than any ship before. Embrace the frosty air as you learn about their audacious expeditions and challenges they overcame. The Fram Museum is more than a ship; it's an engaging journey through polar exploration history, featuring interactive exhibits, lifelike dioramas, and enthralling stories. Uncover the crucial role of sled dogs, admire the explorers' ingenuity, and appreciate their tenacity. Perfect for history enthusiasts and adventure seekers alike, the Fram Museum offers a unique and thrilling experience. Join this remarkable voyage and witness

(continued on next page)



Table B (continued)

Length	Original (baseline from Tripadvisor)	ChatGPT-refined	ChatGPT-created
			how the daring spirit of these trailblazers continues to inspire us today!

## References

- Berridge, K., & Winkielman, P. (2003). What is an unconscious emotion?(The case for unconscious "liking"). *Cognition and Emotion*, 17(2), 181–211. <https://doi.org/10.1080/02699930302289>
- Calvaresi, D., Ibrahim, A., Calbimonte, J.-P., Schegg, R., Fragniere, E., & Schumacher, M. (2021). The evolution of Chatbots in tourism: A systematic literature review. *Information and Communication Technologies in Tourism, 2021*, 3–16. [https://doi.org/10.1007/978-3-030-65785-7\\_1](https://doi.org/10.1007/978-3-030-65785-7_1)
- Campbell, C., Sands, S., Ferraro, C., Tsao, H.-Y., & Mavrommatis, A. (2020). From data to action: How marketers can leverage AI. *Business Horizons*, 63(2), 227–243. <https://doi.org/10.1016/j.bushor.2019.12.002>
- Carvalho, I., & Ivanov, S. (2023). ChatGPT for tourism: Applications, benefits and risks. *Tourism Review*. <https://doi.org/10.1108/TR-02-2023-0088>. ahead-of-print(ahead-of-print).
- Cheng, Y., & Jiang, H. (2022). Customer–brand relationship in the era of artificial intelligence: Understanding the role of chatbot marketing efforts. *The Journal of Product and Brand Management*, 31(2), 252–264. <https://doi.org/10.1108/JPB-05-2020-2907>
- Choi, J. H., Hickman, K. E., Monahan, A. B., & Schwarcz, D. (2023). *ChatGPT goes to law school*. <https://doi.org/10.2139/ssrn.4335905>
- D'Agostino, R. B., Sr., Massaro, J. M., & Sullivan, L. M. (2003). Non-inferiority trials: Design concepts and issues – The encounters of academic consultants in statistics. *Statistics in Medicine*, 22(2), 169–186. <https://doi.org/10.1002/sim.1425>
- Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, 48(1), 24–42. <https://doi.org/10.1007/s11747-019-00696-0>
- Demir, M., & Demir, Ş.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>
- Doborjeh, Z., Hemmington, N., Doborjeh, M., & Kasabov, N. (2022). Artificial intelligence: A systematic review of methods and applications in hospitality and tourism. *International Journal of Contemporary Hospitality Management*, 34(3), 1154–1176. <https://doi.org/10.1108/IJCHM-06-2021-0767>
- Driscoll, A., Lawson, R., & Niven, B. (1994). Measuring tourists' destination perceptions. *Annals of Tourism Research*, 21(3), 499–511. [https://doi.org/10.1016/0160-7383\(94\)90117-1](https://doi.org/10.1016/0160-7383(94)90117-1)
- Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2019). Artificial intelligence for decision making in the era of Big Data – Evolution, challenges and research agenda. *International Journal of Information Management*, 48, 63–71. <https://doi.org/10.1016/j.ijinfomgt.2019.01.021>
- Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., ... 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, Article 102642. <https://doi.org/10.1016/j.ijinfomgt.2023.102642>
- Fui-Hoon Nah, F., Zheng, R., Cai, J., Siau, K., & Chen, L. (2023). Generative AI and ChatGPT: Applications, challenges, and AI-human collaboration. *Journal of Information Technology Case and Application Research*, 25(3), 277–304. <https://doi.org/10.1080/15228053.2023.2233814>
- George, R. (2021). *Marketing tourism and hospitality: Concepts and cases* (1st 2021 ed.). Cham: Springer International Publishing. <https://doi.org/10.1007/978-3-030-64111-5>
- Graf, L. K. M., Mayer, S., & Landwehr, J. R. (2018). Measuring processing fluency: One versus five items. *Journal of Consumer Psychology*, 28(3), 393–411. <https://doi.org/10.1002/jcpsy.1021>
- Haleem, A., Javaid, M., & Singh, R. P. (2022). An era of ChatGPT as a significant futuristic support tool: A study on features, abilities, and challenges. *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*, 2(4), Article 100089. <https://doi.org/10.1016/j.tbench.2023.100089>
- Hulman, A., Døllerup, O. L., Mortensen, J. F., Fenech, M., Norman, K., Støvring, H., & Hansen, T. K. (2023). ChatGPT- versus human-generated answers to frequently asked questions about diabetes: a Turing test-inspired survey among employees of a Danish diabetes center. *medRxiv*. <https://doi.org/10.1101/2023.02.13.23285745>, 2023.2002.2013.23285745.
- Lee, A. Y., & Labroo, A. A. (2004). The effect of conceptual and perceptual fluency on brand evaluation. *Journal of Marketing Research*, 41(2), 151–165. <http://www.jstor.org/stable/30162323>.
- Mariani, M. M., Perez-Vega, R., & Wirtz, J. (2022). AI in marketing, consumer research and psychology: A systematic literature review and research agenda. *Psychology & Marketing*, 39(4), 755–776. <https://doi.org/10.1002/mar.21619>
- Mckinsey. (2022). Generative AI is here: How tools like ChatGPT could change your business. <https://www.mckinsey.com/capabilities/quantumblack/our-insights/generative-ai-is-here-how-tools-like-chatgpt-could-change-your-business>.
- Melián-González, S., Gutiérrez-Taño, D., & Bulchand-Gidumal, J. (2021). Predicting the intentions to use chatbots for travel and tourism. *Current Issues in Tourism*, 24(2), 192–210. <https://doi.org/10.1080/13683500.2019.1706457>
- O'Brien, R. G., & Kaiser, M. K. (1985). MANOVA method for analyzing repeated measures designs: An extensive primer. *Psychological Bulletin*, 97(2), 316–333. <https://doi.org/10.1037/0033-2909.97.2.316>
- OpenAI. (2022). Introducing ChatGPT. <https://openai.com/blog/chatgpt>.
- OpenAI. (2023a). ChatGPT plugins. <https://openai.com/blog/chatgpt-plugins>.
- OpenAI. (2023b). GPT-4. <https://openai.com/research/gpt-4>.
- Paul, J., Ueno, A., & Dennis, C. (2023). ChatGPT and consumers: Benefits, pitfalls and future research agenda. *International Journal of Consumer Studies*. <https://doi.org/10.1111/ijcs.12928>
- Pentina, I., Xie, T., Hancock, T., & Bailey, A. (2023). Consumer–machine relationships in the age of artificial intelligence: Systematic literature review and research directions. *Psychology & Marketing*, 40(8), 1593–1614. <https://doi.org/10.1002/mar.21853>
- Pillai, R., & Sivathanu, B. (2020). Adoption of AI-based chatbots for hospitality and tourism. *International Journal of Contemporary Hospitality Management*, 32(10), 3199–3226. <https://doi.org/10.1108/IJCHM-04-2020-0259>
- Ramesh, A., & Chawla, V. (2022). Chatbots in marketing: A literature review using morphological and co-occurrence analyses. *Journal of Interactive Marketing*, 57(3), 472–496. <https://doi.org/10.1177/10949968221095549>
- Schwarz, N. (2004). Metacognitive experiences in consumer judgment and decision making. *Journal of Consumer Psychology*, 14(4), 332–348. [https://doi.org/10.1207/s15327663jcp1404\\_2](https://doi.org/10.1207/s15327663jcp1404_2)
- Schwarz, N., Jalbert, M., Noah, T., & Zhang, L. (2021). Metacognitive experiences as information: Processing fluency in consumer judgment and decision making. *Consumer Psychology Review*, 4(1), 4–25. <https://doi.org/10.1002/arcp.1067>
- Skift. (2023). ChatGPT is not a priority yet in destination marketing's spend. <https://skift.com/2023/03/15/chatgpt-is-not-a-priority-yet-in-destination-marketing-spend/>.
- Song, H., & Schwarz, N. (2008). If it's hard to read, it's hard to do: Processing fluency affects effort prediction and motivation. *Psychological Science*, 19(10), 986–988. <https://doi.org/10.1111/j.1467-9280.2008.02189.x>
- Tang, L., & Jang, S. (2014). Information value and destination image: Investigating the moderating role of processing fluency. *Journal of Hospitality Marketing & Management*, 23(7), 790–814. <https://doi.org/10.1080/19368623.2014.883585>
- Terwiesch, C. (2023). Would chat GPT3 get a Wharton MBA? A prediction based on its performance in the operations management course. <https://mackinstitute.wharton.upenn.edu/wp-content/uploads/2023/01/Christian-Terwiesch-Chat-GTP.pdf>.
- Tuomi, A. (2021). Deepfake consumer reviews in tourism: Preliminary findings. *Annals of Tourism Research Empirical Insights*, 2(2), Article 100027. <https://doi.org/10.1016/j.annale.2021.100027>
- Tuomi, A. (2023). AI-generated content, creative freelance work and hospitality and tourism marketing. *Information and Communication Technologies in Tourism, 2023*, 323–328. [https://doi.org/10.1007/978-3-031-25752-0\\_35](https://doi.org/10.1007/978-3-031-25752-0_35)
- UBS. (2023). Let's chat about ChatGPT. <https://www.ubs.com/global/en/wealth-management/our-approach/marketnews/article.1585717.html>.
- Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., ... Polosukhin, I. (2017). Attention is all you need. *Advances in Neural Information Processing Systems*, 30. <https://proceedings.neurips.cc/paper/2017/file/3f5ee243547dee91fbd053c1c4a845aa-Paper.pdf>.
- Verma, S., Sharma, R., Deb, S., & Maitra, D. (2021). Artificial intelligence in marketing: Systematic review and future research direction. *International Journal of Information Management Data Insights*, 1(1), Article 100002. <https://doi.org/10.1016/j.jjimei.2020.100002>
- Vlacić, B., Corbo, L., Costa e Silva, S., & Dabić, M. (2021). The evolving role of artificial intelligence in marketing: A review and research agenda. *Journal of Business Research*, 128, 187–203. <https://doi.org/10.1016/j.jbusres.2021.01.055>
- Vogt, C. A. (2010). Customer relationship management in tourism: Management needs and research applications. *Journal of Travel Research*, 50(4), 356–364. <https://doi.org/10.1177/0047287510368140>
- Whittlesea, B. W. A. (1993). Illusions of familiarity. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 19(6), 1235. <https://doi.org/10.1037/0278-7393.19.6.1235>
- Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology*, 9, 1–27. <https://doi.org/10.1037/h0025848>
- Zhang, Y. (2023). Tourist co-creation and tourism marketing outcomes: An inverted U-shaped relationship. *Journal of Business Research*, 166, Article 114105. <https://doi.org/10.1016/j.jbusres.2023.114105>

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