



A Study of Consumers' Visual Attention Allocation in Online Hotel Booking: Evidence from Eye-tracking

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Abstract: Online booking has become the primary channel for hotel reservations in recent years. It offers a range of functions, including price comparison, payment processing, and after-sales services. Meanwhile, the volume of information available on booking pages has expanded significantly. It is crucial to understand the key factors that consumers prioritize when browsing these pages. Existing studies in this area mainly rely on subjective measurements, i.e. surveys. This study uses eye-tracking technology to assess how consumers allocate their attention to different elements while making reservations. Eye-tracking data served as the dependent variable which is more objective and quantitative. Participants' income and hotel price were also included as independent variables. It enables to reveal the interaction effect between hotel price and participants' income levels. Data analysis revealed that, when browsing booking pages, consumers allocated more attention to both positive and negative reviews. This section got significantly higher Total Fixation Duration and Fixation Count. At the same time, price information attracted the shortest Time to First Fixation, indicating faster attention. When analyzing the impact of income, the high-income group displayed longer attention to negative reviews in the initial fixation (First Fixation Duration). They were also more sensitive to brand information based on smaller Time to First Fixation. Furthermore, when browsing high-priced hotels, the high-income group devoted more attention to hotel location and ratings compared to the low-income group. They showed higher Total Fixation Duration and Fixation Count. However, no such differences were observed between the two groups when browsing low-priced hotels. This study makes contributions to a better understanding of consumers' key concerns when booking hotels. It also enriches the context-dependent theory of visual attention across different consumer and hotel groups. Additionally, the findings provide insights for hotel operation and marketing strategy.

Keywords: online booking, visual attention, hotel, price, income, consumer, eye-tracking

1. Introduction

The rapid development of digital economy has made online booking the dominant method for hotel reservations. Its convenience and widespread adoption have significantly transformed consumers' behavior. In China, the penetration rate of online hotel booking exceeded 78% in 2024 (China Tourism Academy, 2025). The online booking allows consumers to easily assess information and make comparison among different hotels. On average, consumers need to browse 10 to 15 hotels before making the final decision (iResearch, 2025; Ctrip Research Institute, 2024). The booking pages present many types of information, i.e. hotel image, price, location, rating, which aim to attract consumers and facilitate them to place orders. As a core cognitive process in information processing, attention allocation directly influences how people prioritize information and process key cues. This makes attention a critical factor for understanding consumers' logic behind hotel booking decisions. The investigation of how consumers browse booking pages could deepen the understanding of the cognitive mechanisms behind consumer decisions. It also provides insights for hotels and online platforms to optimize their information display layouts and value proposition (Wedel & Pieters, 2008; Feng, Wang & Lin, 2022).

Several studies have investigated the crucial cues in hotel booking scenarios. Xiong 2023 suggests that the color of review tags affect viewers' attention and preference. Zhao (2008) finds the brand, location and room design are the three key factors for hotel booking. Many research relies on subjective measures such as questionnaires or interviews. The results of self-report could reflect individuals subjective feeling, while they may lack of accuracy which fail to capture the dynamic nature of attention allocation (Wedel & Pieters, 2008; MBA Library, 2025). For instance, Xie (2024) reported significant discrepancies between subjective questionnaire data and objective eye-tracking data in a study on hotel design. It highlights the limitations of relying solely on subjective measures to capture consumers' true visual processing mechanisms. As an objective tool for quantifying visual attention, eye-tracking technology has been applied in some consumer behavior studies. It could provide more objective evidence for understanding consumers' attention preferences. From the consumer's perspective, existing research often treats consumers as a homogeneous group. Different consumer groups generally have distinct preferences. A more in-depth study of the behavioral characteristics of these segmented consumer groups can generate

more specific conclusions. At the same time, categorizing hotels into different types also helps to understand the interactions between different consumers and different hotel types. A more comprehensive study could improve the applicability of the conclusions to real-world scenarios (Sánchez-Pérez et al., 2019; Original Document, 2025).

This study seeks to address these research gaps by leveraging eye-tracking technology to explore consumers' visual behaviors when making online reservations. Objective and accurate indicators, i.e., Total Fixation Duration, Fixation Count, First Fixation Duration, and Time to First Fixation, would be used to quantify consumers' attention. The study further classifies consumers based on income and categorizes hotels into high-price and low-price groups. These two factors will be treated as independent variables to generate more precise and comprehensive results. This study aims to provide a deeper understanding of the information processing process when consumers making decisions. Furthermore, the findings could offer insights for hotels and online booking platforms to optimize their value propositions and user interface designs.

2. Methods

2.1 Participants

Nineteen participants (N = 19) were randomly recruited by the researchers in a shopping mall in Shanghai, China. The sample included 13 males and 6 females. To examine the effect of income level on the dependent variables, the study employed a median split method based on the distribution of participants' income. The sample median (Median = 20,000 RMB) was used as an objective cutoff value to divide participants into two income groups: a high-income group (Group A, n=12, monthly income between 20,000 and 50,000 RMB) and a low-income group (Group B, n=7, monthly income between 3,000 and 20,000 RMB). This grouping was based on the sample's own distribution rather than pre-specified external criteria which minimized the subjective bias and ensured relatively balanced sample sizes between the two groups. Before the experiment, the general procedure was explained to each participant. All participants signed the consent form and volunteered to participate in the experiment.

2.2 Stimulus

Images of booking pages were used as experimental materials. Each page displayed one hotel containing hotel information including the following elements: hotel name and brand logo, location, price per night, a big image of the hotel's exterior, two smaller images of room facilities, overall rating, positive and negative reviews. There were eight hotels in total. Among the eight hotels, four were "high-price" hotels (priced above 500 RMB per night). The other four were "low-price" hotels (priced below 500 RMB per night).

2.3 Design and procedure

A between-subjects design was used in this study. The participants were divided into a high-income group (Group A) and a low-income group (Group B). The participants were given the task to make a hotel reservation, and then they were guided to sit in front of a computer screen which would display the stimuli. A Tobii 4C Pro eye tracker was positioned below the screen which could record participants' visual trajectory. The screen and eye tracker were connected to the experimenter's computer. Before the formal trial, each participant completed a five-point calibration procedure to ensure the accuracy. Eight booking pages were presented to participants in a random order. Each image was displayed for 15 seconds. The entire experiment lasted approximately 5 minutes. After the experiment, participants received a small gift.

The Areas of Interest (AOI) for each booking page was defined as follows: hotel brand and logo (B), location (L), the hotel exterior (P1), room facilities (P2), price per night (PR), overall rating (R), positive review (CP), and negative review (CN). Total Fixation Duration (TFD), Fixation Count (FC), First Fixation Duration (FFD), and Time to First Fixation (TFF), were extracted for each AOI.

2.4 Data analysis

To investigate the participants' attention patterns when during the booking processes, one-way ANOVA was conducted on TFD, FC, FFD and TFF for each AOI. Meanwhile, to explore the differences in attention patterns between different income and hotel groups, t-tests was used to compare the eye-tracking results.

3. Results

3.1 Single Factor ANOVA analyses

One-way ANOVA revealed significant differences ($p < .05$) in total fixation duration (TFD) and fixation count (FC) across all areas of interest (AOI) (TFD: $F = 4.95$; FC: $F = 7.51$). Pairwise comparisons showed that participants showed

significantly longer TFD and higher FC for CN (TFD: M = 1.66, SD = 1.03; FC: M = 7.89, SD = 5.15) and CP (TFD: M = 1.68, SD = 1.04; FC: M = 7.43, SD = 3.65) compared to other regions.

For time to first fixation (TFF), a significant main effect of AOI was observed ($F = 6.75, p < .05$). While, post hoc comparisons were not statistically significant. Participants showed shorter TFF for PR (M = 2.40, SD = 1.13) relative to other regions.

No significant differences were found for first fixation duration (FFD).

3.2 T test between Group A and Group B for TFD, FC

Independent-samples t-test showed that when viewing high-priced hotels, Group A demonstrated significantly ($p < .05$) higher TFD and FC on R (TFD: M-A=0.95, SD-A=0.59; M-B=0.53, SD-B=0.38 ;FC: M-A=3.65, SD-A=1.43; M-B=2.25, SD-B=0.97) and L (TFD: M-A=1.39, SD-A=0.96; M-B=0.67, SD-B=0.32; FC: M-A=6.11, SD-A=3.70; M-B=3.49 SD-B=1.36) to Group B. There was no difference found for low-priced hotels.

3.3 T test between Group A and Group B for TFF

Independent-samples t-tests revealed that Group A (M=1.46, SD=1.34) exhibited significantly ($p < .05$) shorter TFF on region B than Group B (M=3.65, SD=1.57) when viewing low-priced hotels. In high-priced hotels, Group A (M=2.27, SD=2.33) shoed similar tendency pattern compared to Group B (M=4.07 SD=4.74). Though the difference didn't reach statistical significance ($p > .05$).

3.4 T test between Group A and Group B for FFD

Independent-samples t-test indicated that Group A (H:M=0.23, SD=0.14; L:M=0.35, SD=0.08) demonstrated significantly longer ($p < .05$) FFD on CN compared to Group B (H: M=0.15, SD=0.09; L: M=0.17, SD=0.09) when processing hotel information. This effect is consistent in both high- and low-priced hotels.

Table 1. TFD, FC, TFF and FFD for all participants

		CN	CP	PR	B	R	L	P1	P2
Total	TFD(s)	1.66	1.68	0.87	1.02	0.74	1.13	0.96	0.78
	FC(freq)	7.89	7.43	3.57	4.34	3.03	5.19	4.06	3.36
	TFF(s)	0.21	0.23	0.24	0.23	0.21	0.21	0.21	0.20
	FFD(s)	5.35	4.13	2.40	2.57	4.72	2.70	3.09	6.03
High-price	TFD(s)	1.57	1.60	0.86	0.94	0.79	1.13	0.89	0.71
	FC(freq)	7.79	7.20	3.63	4.20	3.13	5.14	3.96	2.93
	TFF(s)	0.20	0.21	0.25	0.21	0.21	0.22	0.19	0.19
	FFD(s)	5.31	3.59	2.22	2.97	5.14	2.82	2.97	5.42
Low-price	TFD(s)	1.74	1.77	0.87	1.12	0.67	1.13	1.03	0.82
	FC(freq)	7.91	7.61	3.52	4.57	2.99	5.19	4.12	3.54
	TFF(s)	0.22	0.24	0.24	0.24	0.21	0.20	0.22	0.20
	FFD(s)	5.65	4.18	2.68	2.31	4.24	2.37	3.17	5.94

Table 2. TFD, FC, TFF and FFD for Group A

		CN	CP	PR	B	R	L	P1	P2
Total	TFD(s)	1.76	1.90	0.86	0.99	0.83	1.29	1.00	0.81
	FC(freq)	7.65	8.16	3.50	4.04	3.24	5.71	4.13	3.26
	TFF(s)	0.25	0.21	0.25	0.23	0.21	0.22	0.21	0.21
	FFD(s)	5.25	3.68	2.20	1.88	4.45	2.64	3.09	5.82
High-priced hotel	TFD(s)	1.61	1.86	0.86	0.90	0.95	1.39	0.93	0.78
	FC(freq)	7.18	8.08	3.60	3.97	3.65	6.11	3.96	2.86
	TFF(s)	0.23	0.21	0.24	0.21	0.20	0.22	0.20	0.21
Low-price hotel	FFD(s)	5.25	3.81	1.96	2.27	5.08	3.03	3.12	4.90
	TFD(s)	1.88	1.96	0.87	1.11	0.67	1.20	1.09	0.80
	FC(freq)	8.01	8.27	3.47	4.23	2.81	5.28	4.42	3.40
	TFF(s)	0.25	0.22	0.25	0.25	0.21	0.21	0.22	0.20
	FFD(s)	5.58	3.54	2.57	1.46	3.90	2.04	2.88	5.78

Table 3. TFD, FC, TFF and FFD for Group B

		CN	CP	PR	B	R	L	P1	P2
Total	TFD(s)	1.50	1.31	0.89	1.07	0.58	0.84	0.89	0.73
	FC(freq)	8.29	6.19	3.68	4.87	2.66	4.29	3.94	3.54
	TFF(s)	0.16	0.25	0.23	0.22	0.20	0.20	0.21	0.18
	FFD(s)	5.54	4.90	2.74	3.65	5.18	2.81	3.10	6.45
High-priced hotel	TFD(s)	1.51	1.15	0.87	1.00	0.52	0.67	0.82	0.60
	FC(freq)	8.82	5.69	3.68	4.60	2.25	3.49	3.95	3.04
	TFF(s)	0.15	0.22	0.25	0.22	0.22	0.22	0.17	0.16
	FFD(s)	5.41	3.15	2.66	4.07	5.24	2.47	2.66	6.38
Low-price hotel	TFD(s)	1.49	1.43	0.88	1.14	0.66	1.01	0.94	0.85
	FC(freq)	7.75	6.49	3.61	5.14	3.29	5.04	3.61	3.79
	TFF(s)	0.17	0.28	0.22	0.23	0.20	0.19	0.23	0.20
	FFD(s)	5.76	5.28	2.86	3.65	4.82	2.94	3.75	6.26

4. Discussion

The purpose of this study is to explore consumers' attention allocation in hotel booking pages and the interaction effect between hotel price and participants' income levels. Data analysis revealed that when browsing hotel information, participants allocated more overall attention to both positive and negative reviews. This part got significantly higher TFD and FC. Price information attracted people's attention most rapidly, since it had significantly shorter TFF. No significant difference was found in the eye-tracking parameters for hotel exterior and room interior images. Data analysis based on participants' income showed that the high-income group paid more attention to the location and ratings of high-price hotels whose TFD and FC were significantly higher. However, this difference was not reflected in low-price hotels. In addition, it was found that the high-income group exhibited deeper initial processing of negative review information in early attention. They showed higher FFD in the initial fixation. They were also sensitive to the brand information. Since the high-income group noticed the logo and brand more rapidly, with a smaller TFF.

The higher TFD and FC demonstrated that regardless of the hotel's rating, price, or other factors, participants consistently directed more overall attention to the review comments. Different from physical goods, hotel is experience consumption whose core value cannot be fully predicted through objective attributes alone, i.e. location, exteriors. Comments in the review section could provide detail feedbacks of actual experiences from other consumers, which can't be found in other parts. Therefore, consumers tend to allocate more cognitive resources to this area. Another study also confirms that consumers weigh review information much more than other elements (Robson & Noone, 2017). Other studies also found that before placing order, consumers typically fixate on the reviews of the final selected hotel up to seven times during the deliberation phase (Noone and Robson, 2014; Noone and Robson, 2016). The young generation relies more on the reviews. They spend 40% of the fixation duration viewing the review section (Piontiga, 2021). As a form of social proof, review fulfills the basic psychological need for "conformity" in human decision-making and helps reduce uncertainty. Online review is a digital form of social proof. It has a bigger impact on consumers' choice than advertisements (Senecal, 2004).

In addition, analysis of TFD data suggested that participants consistently directed their initial gaze to price information. The price section got smallest TFF. TFF is a key indicator measuring the automatic capture of attention by information, reflecting the brain's pre-attentive processing of information (Wedel & Pieters, 2008). Price appears to bypass complex cognitive evaluation and directly trigger rapid attentional orientation. It's closely related to the underlying encoding mechanisms of the human decision-making system. By prioritizing attention to price, consumers effectively reduce the cognitive load of subsequent information processing and allocate limited cognitive resources to hotels within a narrower price range. This is an efficient strategy that conserves cognitive effort (Karmarkar et al., 2015). Another study indicates that 83% of participants followed the following decision-making pathway "price screening → preliminary evaluation → in-depth analysis of reviews" (Robson & Noone, 2017). From an evolutionary psychology perspective, humans have developed the capacity to rapidly perceive signals of resource value. As a modern symbol of resource value, price appears to engage this neural mechanism of rapid attentional orientation (Knutson et al., 2007). The ability to quickly identify price also facilitates individuals' to assess if it aligns with their consumption capacity. This process has likely shaped an efficient neural pathway which further accelerates attention to price information (Griskevicius et al., 2010). Romano et al. (2024), using wearable eye-tracking devices, found that even in tasks without explicit shopping goals, consumers would notice price information

with a probability of 62%. And younger consumers exhibit more rapid orientation to price. These findings highlight the role of price as an involuntary attention-capturing stimulus.

Data analysis based on participants' income levels revealed that, regardless of whether hotels were high-priced or low-priced, the high-income group showed significantly longer first fixation duration (FFD) for negative reviews and significantly shorter time to first fixation (TFF) for the hotel's brand. FFD reflects the depth of initial cognitive processing of stimuli. The significantly longer FFD observed in the high-income group for negative reviews suggests more thorough initial information decomposition and risk assessment. Typically, high-income individuals are more sensitive to experiential sunk costs, social reputation risks (Lam & Lee, 2019). Moreover, high-income consumers treat negative reviews as key signals for evaluating if the hotel could fit with high-end expectations (Masood, 2023). Initial fixation enables quick assessment of their credibility and potential impact, resulting in increased FFD. These factors collectively contribute to the significantly longer FFD observed among high-income participants. Kahneman (2011) explains this phenomenon via the dual-system theory — high-income individuals are more likely to engage effortful (System 2) processing when evaluating risk-related information. It appears stably across different price ranges.

Additionally, the shorter TFF for brand information suggests stronger pre-attentive attraction to brand cues among high-income participants. According to evolutionary consumption theory (Griskevicius & Kenrick, 2013), consumers develop pre-attentive processing advantages for status signals that align with their self-concept. Brand logos, as concise indicators of quality and social identity, could facilitate rapid quality assessing and identity matching. From a brand equity perspective, the logo conveys trust and quality assurance. High-income consumers rely more on such cues to reduce uncertainty, resulting in faster attentional capture. Low-income consumers, by contrast, prioritize affordability and reduce the dependence of logo cues (Aribarg et al., 2017).

An interaction between income and hotel price was also observed. Higher total fixation duration (TFD) and fixation count (FC) indicate, when viewing high-priced hotels, high-income participants allocated more attention to location and ratings. Similar differences didn't appear in low-priced hotels. This interaction reflects the dynamic relationship between budget constraints and value perception. Self-congruity theory (Sirgy, 1982) suggests that consumers prefer options consistent with their self-concept. High-priced hotels function as status signals, enabling high-income individuals to express identity through attributes such as good location and high ratings. Similarly, the luxury consumption framework (Vigneron & Johnson, 1999) emphasizes the role of visibility and quality cues in conspicuous consumption. Central locations enhance social visibility, while ratings indicate quality. This explains the increased attention to these attributes in high-price hotels. In low-priced hotels, however, the symbolic value has diminished. According to perceived value theory (Zeithaml, 1988), high-income consumers are more demanding of quality. In high-price hotels, price alone is insufficient to signal value and must be reinforced by cues such as location and ratings, prompting greater cognitive investment. In contrast, the lower perceived risk in low-price contexts reduces the need for extensive processing which leads attention to revert to baseline levels.

This study identified people's attention patterns in online hotel booking process via eye-tracking technology. However, several limitations should be addressed in future research. First, this study separated the subjects' income and hotel price into two categories. A more detailed segmentation in future research would be valuable. This could lead to conclusions that are tailored to different subgroups of consumers and types of hotels. Moreover, this study didn't differentiate between the purposes of travel. Different travel purposes, such as business trips, vacations, or visiting family/ friends, may lead to varying outcomes. Future research could further explore the impact of travel purposes.

5. Conclusion

This study investigated consumers' attention allocation during online hotel booking processing via eye-tracking technology. The impact of individuals' income and hotel price were also explored. The findings revealed that participants generally allocated more attention to both positive and negative reviews. While, they first and most rapidly focused on price information at the initial glance. High-income participants showed more initial attention to negative reviews and faster processing of brand information. Additionally, when browsing high-priced hotels, high-income participants paid more attention to hotel location and ratings than the low-income participants. These results highlight the interaction between income and hotel price. The findings expanded the understanding of consumers' decision-making processes and generated practical insights for brand strategy and value proposition. High-end hotels should emphasize three core values—location, ratings, and brand image. Efforts should focus on maintaining a strong rating system, refining location-based marketing, and managing negative reviews to meet the needs of high-income consumers. In contrast, reasonably priced hotels could focus on price competitiveness and guarantee basic services. This strategy may align with the need of budget-conscious consumers.

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