*Marketing and Management of Innovations, **15(1)**, 2024*

The Impact of Flight Attendants' Attractiveness on Perceived Service Quality: An EEG Perspective

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Type of manuscript: Research paper

Cite as: Akan, S., & Atalik, O. (2024). The Impact of Flight Attendants' Attractiveness on Perceived Service Quality: An EEG Perspective. *Marketing and Management of Innovations*, *15*(1), 178–194. https://doi.org/10.21272/mmi.2024.1-14

Received: 5 November 2023
Revised: 8 February 2024
Accepted: 20 February 2024

Publisher & Founder: Sumy State University

Abstract: Competition in the airline transportation sector has significantly intensified following the deregulation act in the United States. To remain competitive, airline companies have begun implementing a range of strategies. One of the strategies commonly used by airlines is to improve service quality. Service quality has been very beneficial for airline companies to maintain profitability and increase market share. To achieve this goal, airlines must investigate the factors influencing service quality and enact improvements and regulations based on these determinants. There are significant studies in the literature on the influence of service employees on service quality. However, there are only a limited number of studies on the influence of the service quality of flight attendants, who are the public face of airline operations, on service quality. This study focuses on the influence of the level of attractiveness (a nonverbal characteristic) of flight attendants on perceived service quality. This research employs a neuromarketing method, specifically the frontal asymmetry approach, using electroencephalography (EEG) techniques. In the experiment, 37 participants were recruited, including 19 males and 18 females, and frontal alpha asymmetry metric results were derived from electrode pairs. In the experiment conducted at the Faculty of Aeronautics and Astronautics, Eskisehir Technical University, participants also evaluated the influence of flight attendant attractiveness on service quality using a survey technique. The findings indicate a significant difference in frontal alpha asymmetry (FAA) metrics between attractive and unattractive flight attendants. FFA metrics of attractive flight attendants were greater than those of unattractive flight attendants. Additionally, FAA metrics were found to be greater under favourable service delivery than under unfavourable service delivery. Furthermore, among the service dimensions, the reliability and responsiveness dimensions had higher FAA metrics than did the other dimensions. A study comparing EEG results with survey responses revealed a statistically significant difference. The findings indicate that flight attendants with higher levels of attractiveness enhance their motivation to approach, thereby contributing to an improvement in perceived service quality. Moreover, these findings underscore the potential of neuromarketing methods for validating outcomes from conventional research approaches. Based on these findings, airlines should develop policies that prioritize attractive attributes in the recruitment of flight attendants. In addition, implementing various programs and incentive systems to maintain the attractiveness of flight attendants is essential. Moreover, providing services with diversified flight attendant profiles tailored to different customer segments is considered crucial for customer satisfaction and experience. Future studies could achieve more comprehensive results by using diverse sample sizes and age groups along with different neuromarketing techniques. Furthermore, the findings suggest a high potential for applying the frontal alpha asymmetry approach in other marketing fields.

Keywords: airline industry; EEG-based metrics; frontal alpha asymmetry; neuromarketing; physical attractiveness; perceptions of service quality.
Funding: There is no funding for this research.

1. Introduction. The aviation industry is considered a rapidly developing sector (Addepalli et al., 2018), with an increase in the number of passengers from approximately 4.3 billion in 2018 to 4.5 billion in 2019 (ICAO, 2020; Song et al., 2019). However, the aviation industry was profoundly affected by the COVID-19 pandemic that began in late 2019 (Bakır et al., 2022), leading to a significant decline in both cargo volume and passenger numbers. Despite this setback, there are signs of recovery (Dube, 2023). According to the Airports Council International (ACI), passenger traffic is expected to return to prepandemic levels by 2024, with a notable increase in subsequent years (ACI, 2022). The airline industry faces increased competition, providing passengers with multiple service options, which places significant pressure on airlines (Law et al., 2022). In this competitive environment, understanding and meeting customer needs with high-quality services has become essential for airline success (El Haddad, 2019). Understanding service quality is pivotal for airlines to maintain their competitive advantage (Shah et al., 2020). Service quality, as per Parasuraman et al. (1985), is a measure of how well the service level delivered matches customer expectations. Therefore, meeting customer expectations is a crucial criterion for airlines to gain a competitive advantage. Moreover, service quality plays a fundamental role in the long-term profitability of companies offering high-quality services (Ghobadian et al., 1994). To understand how passengers perceive their services and to better respond to passengers' needs, airlines must adopt a customer-oriented perspective (Shah et al., 2020). It is argued that such customer-oriented service quality approaches have a positive impact on airline operations and help them achieve specific objectives (Park et al., 2004).

Service quality is influenced by numerous factors, with service employees being one of the most notable (Babbar & Koufteros, 2008; Liou et al., 2011; Uzir et al., 2021). Therefore, it has become essential to recognize how elements related to service employees impact service quality and to develop marketing strategies accordingly. In the literature, there is a notable reference to the significance of physical attractiveness as one of the factors related to service employees that can affect service quality (Bitner, 1990; Li et al., 2019; Soderlund & Julander, 2009). These studies argue that physical attractiveness can have both positive and negative effects on how customers perceive service quality. A more comprehensive look at the studies conducted in this area shows that predominantly participant statements were taken into account, and survey methods were the primary research approach (Babbar & Koufteros, 2008; Bitner, 1990; Li et al., 2019; Liou et al., 2011; Soderlund & Julander, 2009; Uzir et al., 2021). However, cognitive response theory posits that specific nonverbal attributes, such as attractiveness, underlie interactions with others and significantly shape their evaluations. Furthermore, this theory suggests that individuals unconsciously exhibit automatic responses to nonverbal attributes such as attractiveness (Marshall et al., 1998; McColl & Truong, 2013). This theory contends that when assessing services provided by employees with varying levels of attractiveness, evaluations may be susceptible to both conscious and unconscious biases. As a result, it is proposed that employing alternative methods, such as neuromarketing techniques, to detect the role of nonverbal attributes such as attractiveness in service evaluations could yield more effective and unbiased results. To achieve this goal, our study aims to investigate how perceived service quality is influenced by the attractiveness of flight attendants. For this evaluation, we used electroencephalography (EEG) techniques based on the theory of frontal asymmetry. Furthermore, within the framework of frontal asymmetry theory, our study aimed to identify the cortical regions that become active in the context of approach and withdrawal motivation. Another aim of this study was to examine possible correlations between participants' verbal statements and their cortical activities. Additionally, our research aims to introduce a new perspective into the field of market research and offers an innovative analysis method. Furthermore, by measuring cortical activity in this study, we attempt to fill existing gaps in the literature regarding the influence of attractiveness on perceptions of service quality. In line with our stated objectives, the research questions for this study are as follows:

1. To what extent does the attractiveness of flight attendants influence customers' perceptions of service quality?
2. How do favourable and unfavourable deliveries of services affect the perception of service quality?
3. Are there differences between psychometric and neurological measures in relation to perceptions of service quality?
4. In which specific areas of the frontal cortex do changes in service perception manifest themselves?

This study makes several notable contributions to the literature. First, this is an exemplary interdisciplinary study that combines the fields of marketing and neuroscience. By combining the marketing concept of service quality with EEG analysis from neuroscience, this study offers a unique and groundbreaking investigation in the field of marketing. Second, this study provides valuable insights and guidelines for future research that examines the influence of attractiveness on various marketing activities. This study provides the groundwork

for further research into how attractiveness influences consumer behavior in different marketing contexts. Third, while the focus of this study is on the airline industry, its findings are expected to have broader relevance to marketing activities in sectors closely related to airlines, such as tourism and hospitality. The insights gained from this research can help a variety of service-oriented companies optimize their service quality design strategies. Fourth, the study's examination of consumer motivations regarding service quality represents a significant breakthrough. It sheds light on previously unknown areas of consumer cognition. Understanding how participants perceive service quality, their thought processes, and the emotions it elicits will empower more precise decision-making in regard to shaping marketing strategies. Finally, this study pioneered the normalization of participants' verbal statements along with their brain responses in the context of service quality perception and revealed statistically significant differences. Furthermore, the literature breaks new ground by using the frontal asymmetry model to examine service quality perceptions.

The rest of the work is structured as follows. Section 2 provides additional details to the literature related to physical attractiveness and frontal asymmetry theory. Section 3 explains the research methods and materials. Section 4 explains the data analysis and results. Finally, Section 5 provides a brief overview of the study results, implications, limitations and avenues for future research.

2. Literature Review.

2.1. Physical attractiveness and service quality

Physical attractiveness can be defined as "the degree to which one's facial image elicits favourable reactions from others" (Morrow, 1990). Another definition characterizes it as "an attitude, an overall predisposition toward some person, and it may be conceived as a composite evaluative response based on a number of dimensions" (Caballero & Resnik, 1986). In essence, physically attractive people are generally associated with positive qualities such as beauty and charm. Furthermore, it is reasonable to conclude that these people evoke positive emotions, such as liking and fondness in others, which leads to a positive attitude. The concept of physical attractiveness has attracted attention in various areas, including service quality. Some studies claim that the physical attractiveness of service employees has a positive influence on customers' service perceptions (Berscheid & Walster, 1972; Li et al., 2019; Soderlund & Julander, 2009), while others argue that it has no discernible effect (Koernig & Page, 2002; McColl & Truong, 2013). There are even studies that have found a negative influence on customers' service perceptions (Micu et al., 2009; Wan & Wyer, 2015). After a comprehensive review, it becomes clear that there are only a limited number of studies examining how physical attractiveness affects perceptions of service quality. When we analyse studies supporting the positive influence of physical attractiveness on perceptions of service quality, we find that in some cases, this influence remains at the conceptual level, while in other cases, it manifests itself in one or more aspects (Gabbott & Hogg, 2000; Luoh & Tsaur, 2009; Soderlund & Julander, 2009; Sundaram & Webster, 2000). Conversely, some studies have directly and significantly observed the role of physical attractiveness in shaping perceptions of service quality (Berscheid and Walster, 1972; Bitner, 1990; Li et al., 2019). The conflicting results on attractiveness effects are probably due to the different sectors in which these studies were conducted. Each industry possesses unique dynamics, leading to variations in customer attitudes (Triphati & Rai, 2019). Therefore, it is considered essential that studies conducted in specific industries provide clear insights. On the other hand, studies claiming that physical attractiveness has no influence on perceptions of service quality emphasize that this influence is context-dependent and is mainly observed in factors such as trust (Keh et al., 2013; Koernig & Page, 2002; McColl & Truong, 2013). These studies suggest that the role of physical attractiveness on service quality is sometimes overstated, and even individuals who are considered less attractive could improve their perceptions of service quality. In short, there is no consensus in the literature regarding the influence of physical attractiveness on service quality perception.

Furthermore, in terms of the research methods, this study observes a mix of experimental and survey-based approaches. Additionally, the data collected from customers in these studies were often based on psychometric measures. Attractiveness-related evaluations usually arise in the early stages of unconscious processes and influence subsequent evaluations during the communication process (McColl & Truong, 2013). Therefore, to examine the influence of attractiveness on processes such as service delivery, it is essential to measure participants' cortical activities throughout the service interaction. Unlike other objectives, this study aims to use EEG techniques to investigate how attractiveness influences service quality perceptions in favourable or unfavourable service interactions in airline operations.

2.2. Frontal asymmetry theory

Frontal asymmetry is the average difference in brain activity between the left and right frontal areas, measured as hemispheric differences in alpha, beta, gamma, and theta power in EEG (Quaedflieg et al., 2015).

Frontal asymmetry is one of the main measures for revealing asymmetrical frontal activities and motivational aspects(Angus & Harmon-Jones, 2016). Relatively greater left frontal activity indicates an approach or inclination toward a stimulus, whereas relatively greater right frontal activity indicates avoidance or withdrawal from a stimulus (Rajanen et al., 2015). One of the fundamental studies of frontal asymmetry theory, conducted by Davidson and his colleagues in 1978, involved recording brain activations in the right and left hemispheres, particularly in the parietal and frontal regions, using EEG while participants watched television (Davidson et al., 1978). They found that positively rated TV scenes were associated with increased relative left hemisphere alpha activation in the frontal electrodes, while negatively rated scenes were associated with increased relative activation in the right frontal half of the right hemisphere. Consequently, the frontal asymmetry theory developed from this research integrates aspects of both the emotional valence model and the motivational direction model. Davidson's (1998) model proposes that human behavior is influenced by two motivational systems. The first system, the so-called approach system, becomes active in the presence of desired stimuli and is associated with positive emotions. The second system, the so-called avoidance system, is characterized by avoidance behavior when confronted with aversive stimuli.

3. Methodology and research methods.

3.1. Subject and Sample Size

There are different opinions about the ideal number of participants in neuromarketing research. For instance, Paradeep (2010) suggested that the required number of participants in neuromarketing research is approximately 10% of the number in traditional research methods. Another study, serving as a reference for participant numbers, was conducted by Brenninkmeijer (2020), who explained, "When you ask 1000 people about their opinion, you get 999 [different] answers. When you ask 30 brains about their opinion, this says something about all people who are more or less like them. Our brains do not differ so much." In line with the literature, our study involved 37 participants, including 19 males and 18 females. Their ages ranged from 19 to 47 years, and all of them held at least a bachelor's degree. The study focused on consumers who used airline services in the last 12 months in Turkey. Specifically, we narrowed our sample to individuals residing in Eskisehir, excluding passengers from other regions. The choice of Eskisehir as our research location facilitated participant recruitment and streamlined the study's focus. Although there are no airlines offering domestic flights in Eskisehir, passengers use these services via the Istanbul and Ankara airports. Therefore, we anticipate that the data obtained from these participants will provide valuable insights into their perceptions of airline service quality.

3.2. Stimuli

3.2.1. Stimuli design. This study examines how the attractiveness of flight attendants impacts customers' service perceptions. To do this, we first investigated the crucial service stages between passengers and flight attendants. These stages, as identified in the literature, include the following:

a) welcoming passengers aboard;
b) checking tickets, helping passengers find their seats, and providing flight-related information;
c) catering to passengers' food and beverage needs;
d) offering in-flight information and providing items such as magazines, beverages, and pillows;
e) assisting passengers upon disembarking after the flight (Bureau of Labor Statistics, 1994; Cyril Demaria, 2010; Jager & Zyl, 2013).

Subsequently, these service stages were sequentially linked to the SERVQUAL service quality dimensions. SERVQUAL dimensions are commonly used in the airline industry (Dsilva et al., 2020; Hussain et al., 2015; Shah et al., 2020) and provide an opportunity to assess the quality of service provided to customers (Kucharczyk et al., 2011). Specifically, "welcoming passengers aboard" corresponds to the tangibility dimension, "checking tickets, assisting with seating, and providing flight-related information" aligns with the assurance dimension, "catering to food and beverage needs" is associated with reliability, "providing in-flight information and supplies" connects to responsiveness, and "assisting passengers upon disembarking" is linked to empathy. This approach allows us to holistically design the passengers' flight experience and create a comprehensive service bundle that covers all stages.

In the following stages, we transformed each service stage along with its corresponding service quality dimension into distinct service scenarios. Each scenario had both a positive and a negative version. For the "tangibility" dimension, which relates to the flight attendant's external appearance, the favourable scenario depicted a well-groomed and organized flight attendant. In contrast, the unfavourable scenario showed a flight attendant with dishevelled clothing, unkempt makeup, and a careless demeanour. In the "assurance" dimension, which involves instilling confidence through information and politeness, the favourable scenario

featured an attendant who guided the passenger to his or her seat and answered flight-related questions clearly. Conversely, the unfavourable scenario exhibited impolite behaviour and an inability to address passenger queries. The "reliability" dimension, associated with fulfilling promised services, cantered around food and beverage service. In the favourable scenario, the ordered menu was promptly served, while the unfavourable scenario involved significant delays and an incorrect menu. The responsiveness dimension, associated with the willingness to perform the service and the immediate response to requests, is linked to the service of providing passengers with various amenities during the flight. In the favourable scenario, a flight attendant is called by pressing a button on the overhead panel. Upon this call, the flight attendant quickly approaches the passenger, and the passenger complains that the environment is too cold and asks for a solution. In response, the flight attendant promptly leaves and returns with a blanket to address the discomfort of the passenger's concern and offers a warm beverage. In the unfavourable scenario, however, the flight attendant makes no effort to address the passenger's discomfort and does not take any initiative to resolve the issue.

Finally, the "empathy" dimension, which focuses on providing personal attention, was connected to assisting passengers during disembarkation. In the favourable scenario, a flight attendant has aided a passenger with a baby stroller by offering guidance on travelling from the airport to the city centre and providing additional information to address possible needs. Conversely, in the unfavourable scenario, the flight attendant shows indifference to the passenger with the baby stroller, merely indicating the location where the stroller should be picked up and then walking away.

3.2.2. Content validity of the scenario. To accomplish this, we formed a panel of eight marketing experts using Lawshe's (1975) approach. These experts received comprehensive descriptions, explanations, and examples for each dimension and were tasked with assessing their relevance as either "applicable" or "not applicable," in line with previous work (Tian et al., 2001; Yi & Gong, 2013). The experts' responses for each dimension were then compiled to calculate the content validity ratio (CVR). The CRV is calculated by subtracting the number of experts who found a dimension applicable from half of the total number of experts and then dividing the result by half of the total number of experts, following Lawshe's (1975) method. Table 1 displays the detailed CVRs for the favourable and unfavourable scenarios for each dimension.

Table 1. Content validity ratios regarding SERVQUAL dimensions and examples

SERVQUAL Service Dimensions	CVR Values for Favourable Scenarios	CVR Values for Unfavourable Scenarios
Tangibility	1	1
Assurance	0.7	1
Reliability	0.7	1
Responsiveness	1	1
Empathy	1	0.7

Sources: developed by the authors.

Lawshe (1975) emphasized that a level of agreement among panel members exceeding 0.5 indicates consistency with the dimension-specific example. In this study, the values obtained meet Lawshe's (1975) criterion and are all at or above 0.5. This proves the content validity regarding the SERVQUAL service dimensions. It is evident that each scenario aligns with its respective dimension. Thus, the scenario manipulation control phase was initiated.

3.2.3. Scenario manipulation control. In experimental research, the experimental phase typically follows the determination of the research design. However, it is widely acknowledged that conducting manipulation checks of experimental designs can be beneficial (Hauser et al., 2018). In this study, we opted for the survey technique, a quantitative data collection method, to assess whether the favourable and unfavourable service deliveries in the created scenarios effectively convey the anticipated perceptions and meanings. To achieve this goal, a literature review was conducted to identify SERVQUAL items that could represent each dimension and be included in our questionnaire (Okumuş & Asil, 2007; Pekkaya & Akıllı, 2013; Yıldız & Erdil, 2013; Yucel, 2013). In total, we identified 20 items, each corresponding to one of the five dimensions. Since these items had already been translated into Turkish and their reliability and validity had been established in previous research, we employed them directly in our questionnaire. In the survey study, participants did not evaluate scenarios that focused only on favourable or unfavourable service deliveries. They were exposed to favourable service deliveries for some dimensions and unfavourable service deliveries for others. The reason for choosing such a design was to eliminate bias in the participants' responses. Therefore, in this study, the

potential for common method bias was mitigated, and the possibility of bias arising from only favourable or unfavourable service delivery scenarios was prevented. A total of 147 participants were included in the study, and a 7-point Likert scale was used. The data obtained through the survey technique were analysed using the Jamovi software package. In this context, participants' responses to favourable and unfavourable service deliveries were examined using an independent sample t-test. When the normality assumption based on kurtosis and skewness values was met, the assumption of homogeneity of variances for service quality dimensions was not met. Therefore, the Welch's test was used as a more effective alternative to solve this problem (Delacre et al., 2017). The results obtained are presented in Table 2.

Table 2. Results regarding scenario manipulation control

Dimension	Unfavourable (n=147) Mean (SD)	Favourable (n=147) Mean (SD)	t test	P
Tangibility	3.23 (0.779)	5.97 (1.95)	-11.0	< .001
Assurance	4.37 (0.667)	6.37 (2.10)	-8.20	< .001
Reliability	3.85 (1.07)	5.92 (2.04)	-7.94	< .001
Responsiveness	3.61 (1.02)	6.14 (1.83)	-9.75	< .001
Empathy	2.79 (0.990)	6.09 (1.68)	-13.9	< .001

Sources: developed by the authors.

As shown in Table 2, significant differences were observed between favourable and unfavourable scenarios in all dimensions of service quality ($p < .001$). In the unfavourable scenario, participants' mean responses ranged from 2.79 to 4.37, whereas in the favourable scenario, they ranged from 5.92 to 6.37. Therefore, scenario manipulation control is ensured.

3.2.4. Pretest: Assessing flight attendant attractiveness. After creating the scenario, the next step was to choose representative flight attendants, both attractive and unattractive, and assess their attractiveness through a pretest. In the pretest, the survey technique was used, and the data were collected via an online survey. Similar to previous studies, this pretest included 39 samples (Touchette & Lee, 2017), and a convenience sampling technique was used to form this sample. As in similar studies, a 10-point Likert scale was used in this study (Boshoff, 2017; Soderlund & Julander, 2009; Touchette & Lee, 2017). The survey data transferred to the Jamovi program were initially processed by calculating the differences in values obtained from the participants. Subsequently, the kurtosis and skewness values of these differences were observed to be in the range of +2 to -2, indicating that the data met the assumption of a normal distribution. Moving forward, we examined the differences in attractiveness levels assigned to representative flight attendants by participants using a t test, and the results are detailed in Table 3.

Table 3. T test results for the flight attendant attractiveness level

	N	Mean	SD	t test	P
Attractive Flight Attendant	39	2.44	1.10	-31.2	< 0.001
Unattractive Flight Attendant	39	8.72	1.07		

Sources: developed by the authors.

The attractiveness levels of attractive and unattractive representative flight attendants were significantly different [($t=-31.2$, $p<0.001$]). Participants reported perceiving the researcher-designated attractive flight attendant ($M=8.72$) as more attractive than the average attractive flight attendant ($M=2.44$). As a result of the study, the selected representative flight attendants performed the role of representative flight attendants in the prepared videos.

3.2.5. Creation of stimulus. After developing the scenario and selecting representative flight attendants, the next stage involved preparing visual stimuli for participant presentation. In this phase, essential information about the study was provided to the flight attendees who would appear in the stimuli. The stimuli were video recorded at the Cabin Research Laboratory, which is located in the Faculty of Aeronautics and Astronautics at Eskisehir Technical University. A total of 20 stimuli were generated during these recordings, combining two levels of attractiveness (attractive/unattractive) with two service scenarios (favourable/unfavourable) across the five service quality dimensions.

3.3. EEG experiment and data collection

In this study, EEG data were recorded using the Emotiv Epoc X wireless EEG headset. The preference for the Emotiv Epoc X device stemmed from its widespread usage (Arapakis et al., 2019; Maison & Oleksy, 2017; Tolgay et al., 2020). One of its primary merits lies in its complete wireless functionality, allowing seamless data transmission to a computer via Bluetooth. This device has 14 channels, with two bipolar CMS/DRL reference electrodes placed at positions P3 and P4. The available channels consist of electrodes located at international 10-20 positions: AF3, AF4, F3, F4, FC5, FC6, F7, F8, T7, T8, P7, P8, O1 and O2 (EMOTIV, 2023). The Emotiv Epoc X also features a high-pass filter at 0.16 Hz and a low-pass filter at 85 Hz. Additionally, notch filters were applied at 50 Hz and 60 Hz to eliminate artifacts caused by power line interference. Furthermore, this device offers a sampling rate of up to 128 Hz (Benitez et al., 2016). The study was conducted at Eskisehir Technical University, Faculty of Aeronautics and Astronautics. The experimental environment adhered to established criteria found in the literature (Rajanen et al., 2015; Touchette & Lee, 2017). Participants were then selected based on the criteria suggested by Hsu & Chen (2020). These participants received clear instructions, including abstaining from alcohol the day before the experiment and maintaining clean hair. Upon their arrival at the laboratory, the participants were greeted by the researcher and received information about the study's purpose, subject matter, and data collection procedures. In the laboratory, participants were comfortably seated, and EEG caps with predisinfected electrodes were placed on their heads. A solution was then applied to moisten the felt pads on the electrode portion for data collection. The correct placement of the EEG device was verified using the Emotiv Epoc Pro program. Following these preparations, the participants were ready for the EEG recordings. To obtain EEG data, participants were positioned at a specific distance (80 cm) from a 23-inch computer screen. After activating the Emotiv Epoc Pro program, an initial eye calibration was conducted. Participant information was then entered into the stimulus presentation program called the "Paradigm", allowing participants to control the presentation of the stimuli. The experiment began when a participant pressed any keyboard key. Over the course of approximately 13 minutes, participants viewed the stimuli randomly, without any specific order. Following each stimulus, participants were exposed to a blank screen for 5 seconds to reduce cognitive load. In total, participants viewed 20 video stimuli (Figure 1).

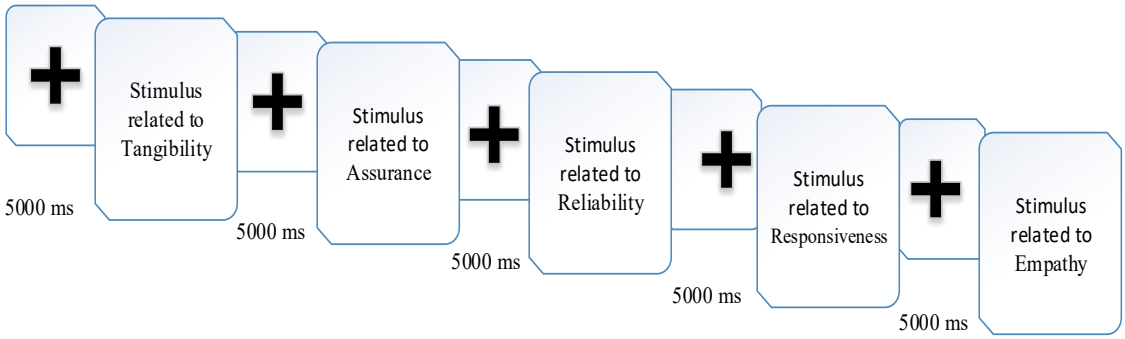

Figure 1. Study Design
Sources: developed by the authors.

After completing the neuropsychological tests, the participants were asked to evaluate the service deliveries they had observed. This assessment was facilitated through a questionnaire administered via Google Forms for psychometric measurements. The questionnaire included questions related to scenario manipulation control. After watching each video related to the experiment, the participants assessed the service they received. The experiment, which included both neuropsychological and psychometric measurements, lasted approximately 45 minutes per participant. Consequently, both questionnaire and EEG data were collected for the designated stimuli. Upon concluding the experiment, the participants expressed gratitude for their contributions and were accompanied out of the laboratory.

3.4. EEG data processing

After stimulus presentation, the recorded data were saved in the Emotiv Epoc Pro program in a separate file in EDF format for further processing in MATLAB. It is important to emphasize that EEG recording not only captures brain activity signals but also includes signals unrelated to brain activity. To ensure accurate analysis of EEG signals, these nonbrain-related EEG data need to be removed or suppressed, as they can negatively impact EEG signal analysis (Jiang et al., 2019). This process, referred to as preprocessing, was

conducted using EEGLAB, a toolbox running in MATLAB. The EEG data transferred to EEGLAB in EDF format were initially visually inspected. Motion and transient artifacts were then removed from the EEG data. A 0.8 Hz high-pass filter and a 30 Hz low-pass filter were then applied to the EEG data following the recommendations of Luck (2014). Finally, independent component analysis (ICA) was employed to complete the preprocessing process. During the preprocessing phase, the alpha power of the EEG data was calculated after artifact removal. In this study, fast Fourier transform (FFT) was used to calculate alpha power from EEG oscillations. To mitigate various errors known as leakage effects in FFT-based measurements, the Hanning window function in MATLAB was used. When EEG signals are divided into windows and processed before being recombined, various distortions can occur at the edges of the windows. The window function performs a minor averaging process with overlap to optimally represent the data, effectively minimizing such distortions (El-Borie et al., 2012). This helps minimize leakage in the FFT. As a common practice in the literature for analysing EEG alpha bands, a 50% overlap was applied to the Hanning window function in this study (Hill et al., 2020; Touchette & Lee, 2017; Underwood & Gartstein, 2022). Consequently, the alpha power for each electrode was determined using these procedures. After calculating the alpha power for each electrode, the FAA metric was calculated. Although calculation methods may vary, calculation of frontal asymmetry is generally achieved through similar approaches, based on subtracting right frontal activities from left frontal activities. This study adopted the approach used in the works of Ravaja (2013) and Vincent (2021):

$$FAA = Log\ (F4, F8, AF4, FC6)\ -\ Log\ (F3, F7, AF5, FC5) \quad (1)$$

As indicated in Equation 1, FAA was calculated by subtracting the logarithm of the left alpha power from the logarithm of the right alpha power. The metrics obtained from MATLAB were exported to an Excel file for further analysis via the Jamovi program.

3.5. EEG and Survey Data Analysis

In this study, a three-factor 2 (attractive/unattractive) x 2 (favourable/unfavourable service scenario) x 5 (service quality dimensions) repeated measures analysis of variance (ANOVA) was used since 20 (2x2x5) different FAA metrics were obtained from the independent variables within the same group. The data were analysed using Jamovi and SPSS Statistics 24.0. To perform a three-factor ANOVA, certain conditions must be met. First, the data to be analysed should be collected from the same group, have a normal distribution, and have equal variances among measurements (sphericity assumption) (Kilmen, 2015). For this purpose, the Shapiro–Wilk test was first used to assess the normality of the data. After the normality assumption was generally met, Mauchly's sphericity test was performed to determine whether the sphericity assumption was met. If the assumption of sphericity was not met, in this case, Greenhouse–Geisser or Huynh-Feldt corrections were applied (Field, 2009). After ensuring that the EEG data met the necessary assumptions for a three-factor ANOVA, further analyses were conducted to examine differences between groups. Therefore, a post hoc test should be used to examine differences between groups. This study used the widely preferred Bonferroni method for multiple comparisons (Miller, 1969). After EEG measurements, participants rated the prepared video stimuli through a survey. This survey, created on Google Forms, prompted participants to rate each of the 20 video stimuli by responding to the statement "Evaluate your satisfaction with this service on a 7-point Likert scale" after viewing. The survey data obtained from participants were subjected to analyses of the EEG data. First, the requirements for using a 3-factor ANOVA in the study were checked. The Bonferroni method for multiple comparisons was then used (Miller, 1969). In this study, both EEG and survey data were collected from participants. To investigate whether there is a measurement discrepancy between the data obtained through different measurement techniques, a correlation matrix was constructed, and a paired sample t test was conducted. Since the measurement units of the survey and EEG data are different, it is necessary to normalize the assessment criteria for joint examination. To normalize these data, the linear normalization (max-min) technique, commonly used in the literature, was preferred (Mathew et al., 2017).

4. Results.

4.1. EEG results

Before performing a three-factor ANOVA on the EEG data, it was ensured that certain conditions were met. First, the Shapiro–Wilk test was used to assess the normality of the data. The results of the Shapiro–Wilk test showed that all conditions except attractiveness, positivity, and responsiveness had p values greater than 0.05. This implies that 19 groups had normal distributions within themselves. Furthermore, the p values for attractiveness, favourable and responsiveness were above 0.05, but the skewness and kurtosis values were in the range of 2.180 and 7.570, respectively. Kline (2016) suggested that skewness values above 3 and kurtosis

values above 10 could be a problem and that values below this threshold would meet the normality assumption. Therefore, the normality assumption was also met for attractiveness, positivity and responsiveness.

This test confirmed that the sphericity assumption was met when p values were less than 0.05. However, it was found in the present study that the assumption of sphericity was not met. In this case, Greenhouse–Geisser or Huynh-Feldt corrections were applied (Field, 2009). For the attractiveness [$F= 7.506$, $p<0.05$, $\eta^2= 0.173$], service scenario [$F= 4.199$, $p<0.05$, $\eta^2= 0.104$] and service dimensions [$F= 13.318$, $p<0.05$, $\eta^2= 0.27$], the Greenhouse–Geisser and Huynh-Feldt values were greater than 0.05, indicating a statistically significant difference among the means of the FAA metrics. Based on the effect size, the eta-squared value for attractiveness was 0.173, that for the service scenario was 0.104, and that for the service dimensions was 0.27. Approximately 17% of the observed variation in FAA metrics was explained by attractiveness, 10% by service scenario, and 27% by service dimensions. The effect sizes obtained in this study suggest a medium effect size for the service scenario and a large effect size for the attractiveness and service dimensions (Cohen, 2007). Although the FAA metrics showed differences in terms of attractiveness, service scenario, and service dimensions, they do not provide information about the differences among the groups within these variables. For this purpose, the Bonferroni method for multiple comparisons was used (Miller, 1969).

Table 4. Differences by groups and post hoc test results

Comparisons	Mean Difference	Standard Error	df	t	P (bon)
Attractiveness					
Unattractive – Attractive	-0.0592	0.0216	36	-2.74	0.010
Service Scenario					
Favourable – Unfavourable	0.0253	0.0124	36	2.05	0.048
Service Quality Dimensions					
Tangibility – Assurance	-0.02767	0.0172	144	-1.605	1.000
– Reliability	-0.09939	0.0172	144	-5.764	< 0.001
– Responsiveness	-0.0813	0.0172	144	-4.715	< 0.001
– Empathy	-0.00851	0.0172	144	-0.493	1.000
Assurance – Reliability	-0.07172	0.0172	144	-4.159	< 0.001
– Responsiveness	-0.05363	0.0172	144	-3.110	0.023
– Empathy	0.01917	0.0172	144	1.111	1.000
– Responsiveness	0.01808	0.0172	144	1.049	1.000
– Empathy	0.09088	0.0172	144	5.270	< 0.001
Responsiveness – Empathy	0.0728	0.0172	144	4.222	< 0.001

Sources: developed by the authors.

The results of the comparisons for attractiveness, service scenario and service dimensions are shown in Table 4. When comparing FAA metrics from flight attendants representing the unattractive and attractive categories, a significant difference was found ($p < 0.05$). The FAA metrics of the attractive flight attendant (mean = 1.143, SE = 0.24) were greater than those of the unattractive flight attendant (mean = 1.084, SE = 0.29). On the other hand, when comparing FAA metrics for favourable and unfavourable service deliveries, a significant difference was found ($p < 0.05$). The FAA metrics for favourable service deliveries (mean = 1.126, SE = 0.24) were greater than those for unfavourable service deliveries (mean = 1.101, SE = 0.29). Significant differences were also found among the frontal asymmetry metrics obtained for the five different service dimensions ($p < 0.05$). The FAA metrics for reliability (mean = 1.169, SE = 0.24) were greater than those for tangibility (mean = 1.07, SE = 0.3), assurance (mean = 1.098, SE = 0.27), and empathy (mean = 1.078, SE = 0.25). On the other hand, FAA metrics for responsiveness were found to be greater (mean = 1.151, SE = 0.26) than tangibility (mean = 1.07, SE = 0.3), assurance (mean = 1.098, SE = 0.27), and empathy (mean = 1.078, SE = 0.25). Finally, there were no significant differences among the interaction variables.

4.2. Survey results

To conduct a three-factor ANOVA on survey data, it was necessary to ensure that certain conditions were met. For this purpose, the Shapiro–Wilk test was first used. According to the results of this test, the p value was greater than 0.05 in all cases. However, since the skewness and kurtosis values ranged from -1.57 to 7.46, the normality assumption was met (Kline, 2016). Another assumption, the sphericity assumption, was tested using Mauchly's sphericity test. All p values in Mauchly's sphericity test were greater than 0.05, and the

sphericity assumption was not met. In this case, Greenhouse–Geisser or Huynh-Feldt values were used (Field, 2009). The interactivity [F= 20.848, p<0.05, $\eta^2 = 0.367$], service scenario [F= 2976.02, p<0.05, $\eta^2 = 0.923$], service dimension [F= 2.641, p<0.05, $\eta^2 = 0.068$], attractiveness-service condition [F= 22.358, p < 0.05, $\eta^2 = 0.383$] and service dimension-service scenario [F= 3.505, p < 0.05, $\eta^2 = 0.089$] interactions had Greenhouse–Geisser and Huynh-Feldt values greater than 0.05, indicating a significant difference between the survey averages. In contrast to the EEG results, differences in the interaction variables were observed in the survey results.

4.3. Comparison of EEG and survey results

To compare EEG and survey data, normalization is necessary. To achieve this, the data were first normalized using the (max-min) technique (Mathew et al., 2017). After the data were normalized, they were converted into standardized values ranging from 0 to 1. A correlation matrix for the attractiveness and unattractiveness variables was then created based on the normalized values (Table 5).

Table 5. Correlation matrix

	EEG	**Survey**		**EEG**	**Survey**
Unattractive			**Attractive**		
EEG Pearson's r	1		EEG Pearson's r	1	
p value	–		p value	–	
Survey Pearson's r	0.101	1	Survey Pearson's r	0.079	1
p value	0.052	–	p value	0.132	–

Sources: developed by the authors.

Table 5 shows the relationship between two different measurement techniques used to evaluate service delivery by both attractive and unattractive flight attendants. There was no relationship between the survey and the use of EEG methods as measurement techniques. The data obtained using both measurement techniques were then subjected to a paired-sample t test, and the significant differences between them were examined. The results of the paired samples t test are shown in Table 6.

Table 6. Paired-sample t-test

	Statistics	**df**	**P**
EEG – Survey (Attractive) Student's	12.2	369	<0.001
EEG – Survey (Unattractive) Student's	-16.3	369	<0.001

Sources: developed by the authors.

Before subjecting the normalized EEG and survey data to a paired t test, we checked whether they had a normal distribution (skewness and kurtosis values between 2 and 7.46). Since both measurement datasets had a normal distribution, Student's t test was used for the difference test. There were significant differences between the two measurement techniques with regard to the service delivery of attractive and unattractive flight attendants. Participants rated higher satisfaction scores for the service presented by attractive flight attendants in the survey technique, while lower FAA metrics were measured. On the other hand, they assigned lower satisfaction scores in the survey technique for services presented by unattractive flight attendants, while higher FAA metrics were measured.

5. Conclusions. In this study, the EEG technique was employed, adopting the frontal asymmetry approach to determine the role of flight attendant attractiveness on perceived service quality. Additionally, a survey method was used to verify the results and examine methodological differences. The results of the study indicate that flight attendants with different levels of attractiveness influence participants' approach and withdrawal motivations in different service scenarios. It was observed that flight attendants with attractive characteristics increased their approach motivation and perceived service quality. Additionally, findings supporting frontal asymmetry theory were obtained from this study. Furthermore, differences between the methods used in this study were also revealed. The study therefore provides valuable theoretical and managerial insights.

In this study, the EEG technique was employed, adopting the frontal asymmetry approach to determine the role of flight attendant attractiveness on perceived service quality. Additionally, a survey method was used to verify the results and examine methodological differences. The findings obtained from the study have provided theoretical contributions to the literature from various perspectives.

First, it was observed that an attractive flight attendant increased the participants' approach motivation. Individuals with attractive and pleasant characteristics are known to evoke positive emotions from others (Morrow, 1990). Accordingly, the attractiveness effect was conceptualized as the beauty premium effect. This effect suggests that attractive individuals may receive more positive performance evaluations than others (Mobius & Rosenblat, 2006). Therefore, this study has demonstrated that flight attendants with high levels of attractiveness enhance their perceived service quality. This finding is consistent with the work of Louh et al. (2009), Li et al. (2019), Sundaram & Webster (2000), Gabbott & Hogg (2000), and Soderlund and Julander (2009), who emphasize the role of attractive service providers on perceived service quality. Furthermore, these results are supported by EEG results consistent with cognitive response theory and suggest that nonverbal attributes (such as attractiveness) influence individual evaluations (McColl & Truong, 2013). It is suggested that the EEG technique could be used to measure other nonverbal elements.

Second, this study obtained higher FAA metric scores for favourable service delivery for each service quality dimension. The present study supports frontal asymmetry theory, which associates positive situations with high asymmetry values (Davidson et al., 1978). In the corresponding study, television scenes that evoked positive emotions increased participants' left hemisphere alpha activation. It has been suggested that FAA could be used as a reference for identifying positive or negative situations (Angus & Harmon-Jones, 2016). In subsequent years, FAA has been applied in different fields, such as marketing, and has produced similar results (Boshoff, 2012). Therefore, the results of this study suggest that the FAA metric could be used to determine the impact of the services provided. In light of these results, it is recommended that the frontal asymmetry approach may be preferred when assessing the impact of situations such as service errors and failures.

Third, higher FAA metric scores were obtained for the reliability and responsiveness dimensions. Compared to other dimensions (tangibility, assurance, empathy), the FAA metric scores in these dimensions are greater because of the specific properties of the stimuli. In the stimulus related to the "reliability" dimension, participants made a menu selection, while in the "responsiveness" dimension, the flight attendant promised to bring the passenger a blanket. In both dimensions, participants formed expectations about the service to be provided, even if it was for a limited time. This expectation is believed to have increased the FAA value. In this regard, Miller and Tomarken (2001) argued that participants' expectations could significantly increase left frontal asymmetry values compared to those in normal situations. Therefore, there may be a relationship between expectancy situations and FAA values, and the effects of different expectancy situations can be determined using the frontal asymmetry approach.

Fourth, this study provides important findings related to frontal asymmetry theory. Frontal asymmetry expresses the average difference in brain activities between the right and left frontal areas and argues that human behaviors are guided by a two-way motivation system (Quaedflieg et al., 2015). In studies using this approach to reveal individuals' approach and withdrawal motivation, asymmetrical relationships between different brain regions have been observed. Some studies calculate the FAA with single electrode pairs (F3-F4) (Garczarek et al., 2021; Maison & Oleksy, 2017), while others calculate the FAA between multiple electrode pairs (Moya et al., 2020; Ohme et al., 2010). In this study, a more comprehensive approach was taken, focusing on all electrode pairs in the left and right frontal regions, as seen in the studies by Vecchiato (2011) and Dulabh (2018). This is because the use of multiple electrodes has enabled a more comprehensive assessment of the interactions between different brain regions (Luck, 2014). This allows for a thorough measurement of the frontal region in the study and provides richer and more comprehensive results. Based on the results of this study, it is proposed that electrode pairs F3-F4, F7-F8, AF3-AF4, and FC5-FC6 can be used as reference electrodes for determining the influence of factors (such as attractiveness, race, gender, etc.) that affect service quality.

Finally, the EEG technique and survey method data were normalized and compared, revealing a significant difference between the results of both measurements. This difference is believed to be due to the timing of the data collection. Participants' data are collected instantaneously with the EEG method, and their approach or withdrawal motivation is measured at that moment. In contrast, data are collected after exposure to the stimulus in the survey method. In this regard, Touchette (2017) argued that the survey method was a measure of conscious responses, while brain activations represented a more comprehensive form of measurement that also included unconscious processes. Another point that stands out in the comparison of the EEG and survey methods in the study is that participants attributed higher satisfaction scores to the service delivered by an attractive flight attendant in their survey evaluations compared to FAA metrics, while they assigned lower satisfaction scores to services provided by the unattractive flight attendant. Dean (2014) attributed variability

in participants' perceptions of service quality based on the level of attractiveness to the halo effect. According to this view, participants rated the services delivered by an attractive flight attendant with higher satisfaction ratings than they should, while they assigned lower satisfaction ratings to the services delivered by an unattractive flight attendant. In this case, FAA metrics can provide more objective insights into participants' actual emotions and thoughts regarding the service of an attractive flight attendant. Therefore, the FAA approach is expected to greatly benefit researchers in measuring the impact of marketing activities aimed at emotionally and manipulatively influencing consumers. Comparing different approaches offers researchers a different perspective to achieve more objective and realistic results (Shan et al., 2018).

This study also provides valuable practical and managerial insights for marketers and academics. The results of this study suggest that flight attendants with attractive characteristics increase their approach motivation and enhance their perceived service quality. Therefore, airlines are encouraged to prioritize flight attendant candidates who can be considered attractive in their recruitment processes. Although this practice is implemented by many companies (Heracleous et al., 2006), the results of this study are consistent with those of companies that follow this approach. However, despite its proven importance in customer satisfaction, physical attractiveness should not be the only criterion when hiring flight attendants. It can be unethical to recruit employees based solely on their appearance. Furthermore, evaluating attractiveness while ignoring all other characteristics can risk recruiting candidates with low skills and competencies (Soderlund and Julander, 2009). To prevent this, human resources management should be extremely careful in the recruiting process and avoid making decisions based on beauty bias. In this regard, airlines can adopt a multicriteria evaluation approach in their recruitment processes (Dağdeviren, 2010; Karam et al., 2020). In addition to attractiveness, other talents and skills can also be assessed together. In this way, a more ethical and fair recruitment policy can be developed with an objective approach.

One important aspect that should not be overlooked is that beauty does not always evoke positive feelings for customers (Micu et al., 2009; Wan & Wyer, 2015). It is likely that customers with lower levels of attractiveness perceive greater social distance from attractive flight (Dong & Wyer, 2014). In other words, customers with lower attractiveness levels may avoid social interactions with attractive flight attendants due to self-concern. In this regard, managers may inadvertently make more serious mistakes by focusing on the physical appearance of flight attendants. Li et al. (2019) suggested segmenting customers based on their physical and personal characteristics. They argue that recruiting service personnel with different levels of attractiveness based on different customer segments is a more accurate strategy. They believe that such tactical decisions can also prevent strategic mistakes. Therefore, airlines can increase their market share by developing competitive strategies that focus on different customer segments and thereby differentiate themselves from competitors.

Attractiveness is a known manipulable trait that can be controlled through elements such as clothing, makeup, hairstyle, diet, and exercise. Some airlines, such as Singapore Airlines, are aware of this and offer various training programs for flight attendants to focus on beauty and attractiveness (Choi et al., 2020). However, the scope of such courses should be expanded to include additional elements such as nutrition and exercise to create a more comprehensive program. In addition to these programs, flight attendants should be encouraged to sustain their physical attractiveness through diverse support and incentive initiatives. We believe that this would be beneficial for both airlines in achieving their goals and improving the quality of life of flight attendants. In particular, it will contribute to improving service quality by positively influencing the motivation of flight attendants. (Benitez et al., 2019). Another critical point of managerial implications in this study is the similarity of the results of both measurement techniques in terms of favourable and unfavourable service deliveries. As with all services, there may be failures and deficiencies in the delivery of flight services. Although it may not be possible to completely eliminate these failures and deficiencies, it is possible to reduce them through specific policies. To prevent possible negative service deliveries, the root causes can be identified and eliminated. On the other hand, managers can focus their efforts on quality management to reduce service failures that negatively affect the perception of service quality. In this regard, customer feedback systems can be developed. Additionally, reward and incentive systems can be implemented for flight attendants to encourage successful service delivery. Leveraging technological advancements such as mobile applications can also help improve service quality. In addition, through the standardization of services, procedures can be developed, and flight attendants can be better equipped through various training programs in these areas. As a result, this section provides various recommendations for airlines. These recommendations argue that policies developed for flight attendants could improve service quality. In addition, it is emphasized

that increasing customer satisfaction leads to greater revenue for airlines and is an important indicator of competitive advantage.

This study has several limitations and provides recommendations for future research. Given the limitations of sample size, time, and financial constraints, it is important to consider expanding the participant pool in future studies to improve the representativeness of the results. Furthermore, broadening the study's scope beyond passengers in Eskisehir, who use air transportation services to include individuals from various cities, regions, and countries, can offer more diverse insights. Additionally, the participants in this study were predominantly young adults. Therefore, future studies should include different age groups to enhance the generalizability of the results. Moreover, this study did not consider airlines' business models or service classes but rather presented a general framework. Future research could examine the differences between airlines that pursue differentiation and those that pursue cost leadership strategies. Additionally, perceived service quality differences between different service classes, such as economy and business, could be identified. Furthermore, this approach could be adopted for measuring service quality in different areas, such as the reservation and check-in process. In this study, a 14-channel wireless EEG device was used. It is believed that using an EEG device with more channels is important for achieving higher resolution. (Aldayel et al., 2020). Additionally, since only the EEG method was used in this study, the data obtained are limited to the capability and performance of this technique. It is expected that the use of neuromarketing techniques that measure nonbrain activities, such as eye tracking, EDA (electrodermal activity), and GSR (galvanic skin response), in addition to EEG, will enable a more comprehensive and holistic view of consumer responses. While this study utilized the FAA model within the context of service quality, future research can explore its applicability in various marketing areas beyond predicting purchase behavior (Ramsøy et al., 2018). Additionally, comparisons between FAA metrics and metrics from other EEG frequency bands (delta, theta, beta, gamma) could reveal valuable relationships. In this study, nonverbal characteristics focused solely on attractiveness. In future research, different nonverbal features, such as gender and race, can be explored within the framework of frontal asymmetry theory, or the effect sizes of different nonverbal features can be compared. This study used the event-related oscillation method for data collection. Future research could consider incorporating the event-related potentials method, allowing for the identification of critical potentials linked to service quality. Thus, the potential associated with service quality can be identified.

Conflicts of Interest: The authors declare no conflicts of interest.

Data availability statement: Not applicable.

Informed Consent Statement: Informed consent was obtained from all the subjects involved in the study.

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Вплив привабливості бортардс на якість обслуговування: перспектива ЕЕГ

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Конкуренція в секторі авіаперевезень значно зросла після прийняття закону про дерегуляцію в Сполучених Штатах. Щоб залишатися конкурентоспроможними, авіакомпанії впровадили ряд стратегій, серед яких однією з найбільш ефективних є покращення якості обслуговування. Підвищення якості обслуговування є ключовим для збереження прибутковості та збільшення частки ринку авіакомпаній. Для цього важливо аналізувати фактори, що впливають на якість послуг, та впроваджувати вдосконалення на основі отриманих даних. У науковій літературі існує низка досліджень щодо впливу працівників сфери послуг на якість обслуговування, однак досліджень, що стосуються впливу бортпровідників, які виступають публічним обличчям авіакомпанії, на якість обслуговування, недостатньо. Це дослідження зосереджує увагу на дослідженні впливу привабливості бортпровідників, як невербальної характеристики, на сприйняту якість обслуговування. Експеримент було проведено на факультеті аеронавтики та астронавтики Технічного університету в Ескішехірі, де учасники за допомогою опитувальника оцінювали вплив привабливості бортпровідників на якість обслуговування. У дослідженні використовувався метод нейромаркетингу, зокрема підхід фронтальної асиметрії, за допомогою техніки електроенцефалограми. Участь у експерименті взяли 37 осіб, серед яких було 19 чоловіків та 18 жінок. Результати вимірювань фронтальної альфа-асиметрії (ФАА) були отримані з пар електродів (F4, F8, AF4, FC6) та (F3, F7, AF3, FC5). Висновки дослідження виявили значну різницю в метриках ФАА між привабливими та менш привабливими бортпровідниками. Метрики ФАА для привабливих бортпровідників були вищі, ніж для менш привабливих. Крім того, показники ФАА були вищі при якісному наданні послуг. Крім того, серед аспектів сервісу, надійність та оперативність відзначилися вищими показниками ФАА порівняно з іншими аспектами. Дослідження, що порівнювало результати ЕЕГ з відповідями на опитування, виявило статистично значущу різницю. Аналізуючи результати ЕЕГ та опитувань, учасники повідомили про вищі оцінки задоволення від послуг, наданих привабливими бортпровідницями, хоча показники ФАА були нижчими. Натомість послуги, надані менш привабливими бортпровідницями, отримали нижчі оцінки задоволення в опитуваннях, в той час як показники ФАА були вищими. Результати цього дослідження демонструють, що метод фронтальної асиметрії може слугувати альтернативним способом оцінки впливу невербальних характеристик, зокрема привабливості бортпровідників, на сприйману якість обслуговування. Це також висвітлює потенціал методів нейромаркетингу для підтвердження результатів, отриманих за допомогою традиційних дослідницьких методик. На підставі отриманих результатів рекомендується розробляти політики, які б враховували привабливість персоналу як важливий аспект при найманні бортпровідників авіакомпаніями. Також варто впроваджувати різноманітні програми та стимули для підкріплення привабливих рис бортпровідників. Важливим є надання послуг з різноманітними профілями бортпровідників для задоволення потреб різних сегментів клієнтів, що сприятиме покращенню їхнього задоволення та досвіду. Майбутні дослідження, що використовують різні розміри вибірки та вікові групи, а також різні методи нейромаркетингу, можуть надати більш повне розуміння даної теми. Отримані результати також свідчать про великий потенціал методу фронтальної альфа-асиметрії для застосування в інших сефрах маркетингу.

Ключові слова: авіаційна промисловість; лобова альфа-асиметрія; метрики на основі ЕЕГ; нейромаркетинг; сприйняття якості обслуговування; фізична привабливість.