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How Will Artificial Intelligence Perception Shape the Careers of Tourism Students? An EEG-Based Study

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Abstract

This study explores how tourism students, as future hospitality professionals, respond emotionally and cognitively to AI framed as either an opportunity or a threat. Unlike prior research relying on self-reports, this study uses electroencephalography (EEG) to capture implicit affective and cognitive responses. Forty students were randomly assigned to view positive AI statements (efficiency, sustainability, customer experience) or negative ones (job insecurity, reduced human interaction, ethics), after a baseline recording. EEG measured valence, arousal, approach-withdrawal orientation, and alpha synchronization. Results revealed a clear duality: positive statements produced positive valence, lower arousal, and higher alpha synchronization, indicating comfort and openness; negative statements triggered negative valence, higher arousal, and alpha desynchronization, reflecting stress and vigilance. Students recognized AI's benefits while remaining alert to its risks. The study highlights EEG's value in revealing subconscious responses complementing self-reports, underscoring the need for balanced educational strategies supporting sustainable AI integration in hospitality.

Keywords: Artificial intelligence; Tourism and hospitality; EEG; Emotional responses; Career planning

1. INTRODUCTION

Artificial intelligence (AI) has rapidly emerged as a disruptive force in the global hospitality and tourism industry, transforming customer service, operational management, and workforce dynamics. From chatbots and recommendation systems to automated check-in services and service robots, AI is increasingly embedded into hospitality operations, offering opportunities for efficiency, personalization, and innovation (OECD, 2024). The Artificial Intelligence market worldwide is expected to achieve a remarkable value of US \$617.62 billion by the year 2026. (Statista, 2026). AI represents the embodiment of human intelligence in machines, enabling them to perform tasks and even mimic human problem-solving processes (Russell & Norvig, 2016; Lai & Hung, 2018).

In the context of hospitality, AI has been shown to significantly enhance operational efficiency, guest experience, and service quality (Malelak et al., 2024). However, the adoption of AI also raises critical concerns, particularly among young professionals preparing to enter the sector. For tourism and

hospitality students, AI evokes ambivalence: enthusiasm about innovation and efficiency, but also anxiety regarding job insecurity, reduced human interaction, and threats to the authenticity of service encounters (Li et al., 2024). Previous research has explored employees' and students' perceptions of AI primarily through surveys and interviews, often revealing a mix of excitement and fear (Bastiaansen et al., 2022; Koo et al., 2021; Lu et al., 2019; Law et al., 2024).

Recent studies focusing specifically on students highlight this duality. Lestari et al. (2021) found that hospitality students associate AI and service automation (RAISA) with both enhanced career competencies and uncertainties about future opportunities. A survey of 234 tourism students revealed generally positive attitudes toward AI, with frequent use of AI tools for learning and research, but relatively low levels of negative attitudes (Kırkar & Buzlukçu, 2024). Similarly, Küçükergin (2025) reported that while students see AI as creating economic opportunities, some expressed concern about job replacement, noting that confidence in AI grows when its applications are better understood. These findings underscore the importance of investigating not only what students say about AI, but also how they process it emotionally and cognitively.

Traditional self-reported methods, while valuable, cannot fully capture the implicit affective and cognitive mechanisms underlying such perceptions. Neuroscientific approaches, particularly electroencephalography (EEG), offer a complementary perspective by measuring brain activity in real time and linking it to emotional dimensions such as valence, arousal, and attentional engagement (Lei, 2024). In tourism research, EEG has already been applied to topics such as destination marketing, consumer decision-making, and experience design (Li et al., 2022). Still, it has rarely been used to explore how future professionals react to AI narratives specifically.

Evidence from related fields demonstrates the feasibility and value of EEG in educational and design contexts. In education, EEG-based systems have been used to distinguish attentional states during online learning (Al-Nafjan et al., 2022; Apicella et al., 2022). In design education, Wang et al. (2025) showed that AI-generated content tools enhanced concentration and reduced cognitive fatigue, as reflected in beta and alpha band activity. Together, these studies suggest that EEG can provide a robust methodology for capturing subtle affective–cognitive responses to technology—responses that may remain hidden in traditional surveys.

Against this backdrop, our study addresses a critical gap in tourism research by examining the EEG-based responses of tourism students to positive and negative AI narratives. Specifically, we analyze emotional valence, physiological arousal, the approach–withdrawal (AW) index, and alpha ERD/ERS patterns. Preliminary results show a consistent duality: positive AI statements (e.g., improved customer experience, sustainability, innovation) evoke comfort and openness, while negative statements (e.g., job insecurity, reduced human interaction, ethical concerns) induce vigilance, stress, and heightened cognitive engagement. By revealing not only what students articulate about AI but also how they neurophysiologically process it, this study provides unique insights for tourism educators, managers, and policymakers seeking to guide the balanced and sustainable integration of AI into hospitality.

2. METHODOLOGY

2.1. EEG process

EEG data were collected using the **Muse 2 headband**, a portable four-channel EEG system with electrodes positioned at AF7, AF8 (frontal), and TP9, TP10 (temporo-parietal). Signals were sampled at 256 Hz. This configuration provides acceptable signal quality for affective neuroscience studies

while maintaining ecological feasibility in applied contexts such as tourism education research. EEG preprocessing was performed in Python.

1. Band-pass filtering between 1–40 Hz to remove slow drifts and high-frequency noise.
2. Independent Component Analysis (ICA) was used to remove ocular and muscle artifacts.
3. Segmentation of 10-second epochs time-locked to each statement onset.
4. Baseline correction using the 200 ms pre-stimulus interval.
5. Automatic rejection of epochs exceeding $\pm 100 \mu V$.

All EEG indices were calculated **relative to the 10-second eyes-closed baseline** recorded at the beginning of the session. After preprocessing, 40 participants had sufficient clean data for inclusion.

Four EEG-derived indices were computed to capture emotional and attentional responses:

- **Valence:** Estimated from **frontal alpha asymmetry**, calculated as the log-transformed difference between left (AF7) and right (AF8) alpha power. Positive values indicate greater left activity (associated with positive affect), while negative values reflect greater right activity (associated with negative affect).
- **Arousal:** Indexed by the **beta-to-alpha power ratio** across frontal electrodes. Higher ratios indicate higher arousal, reflecting greater physiological alertness or stress.
- **Awareness-Withdrawal (AW) Index:** Computed following Di Flumeri et al. (2017) as a composite measure of approach-withdrawal tendencies. Positive values denote **awareness/engagement** (approach), whereas negative values denote **withdrawal/avoidance**.
- **Alpha ERD/ERS:** Calculated as event-related desynchronization/synchronization in the 8–12 Hz band. Positive ERS values reflect increased alpha synchronization (relaxation, low cognitive load), while negative ERD values indicate desynchronization (active processing, stress, or attentional effort).

2.2. Participants

Forty undergraduate students from the Department of Tourism at Antalya Bilim University participated in the experiment (20 female, 20 male; mean age = 21.3 years, SD = 1.8). All participants were right-handed, reported normal or corrected-to-normal vision, and had no history of neurological or psychiatric disorders. They were randomly assigned to one of two groups: the **Positive group** (n = 20), exposed to positive AI-related statements, or the **Negative group** (n = 20), exposed to negative AI-related statements. Participation was voluntary, and all students signed informed consent forms in line with ethical research guidelines.

2.3. Stimuli and Rationale

The experimental stimuli consisted of ten short statements about AI in tourism. Each participant was presented with **five statements**, either all positive or all negative depending on group assignment. The items were designed to capture the dual discourse of AI in tourism: its opportunities and benefits versus its risks and concerns. **Positive statements** emphasized enhanced customer experience, operational efficiency, sustainability, personal development, and innovation. These reflect AI's potential contributions to service quality, efficiency, and long-term industry growth. **Negative statements** addressed job insecurity, reduced human interaction, unfair competition, personal stress,

and ethical/privacy risks. These reflect widely reported anxieties regarding technology adoption in the hospitality sector.

A full list of the statements and the rationale for their inclusion is provided in Table 1.

Statement	Rationale
Positive AI-related statements	
Artificial intelligence systems are essential for enhancing customer experience in the tourism sector.	Reflects AI's widely reported role in improving service quality and personalization.
AI-powered applications (chatbots, recommendation systems, etc.) can improve the efficiency of tourism businesses.	Captures the operational efficiency dimension of AI adoption in hospitality services.
The use of AI in tourism can enhance sustainability and help manage resources more efficiently.	Highlights the sustainability discourse, a key concern in tourism's environmental impact.
Developing myself in understanding and utilizing AI technologies in tourism is important to me.	Represents students' willingness to engage with AI as part of their professional development.
I believe I can develop innovative AI-based solutions in the field of tourism.	Reflects entrepreneurial and innovation-oriented perspectives among future professionals.
Negative AI-related statements	
I am worried that AI systems may replace human employees in the tourism sector.	Captures concerns about employment insecurity and fears of automation.
I fear that AI-supported customer service systems (e.g., chatbots) will reduce human relationships in tourism.	Addresses anxieties that AI may diminish the human-centered nature of hospitality.
I believe AI-based pricing and marketing systems may create unfair competition in the sector.	Reflects economic and market-related anxieties tied to AI-driven systems.
Learning and using AI applications in tourism may be stressful and challenging for me.	Captures perceived personal difficulty and stress in adapting to new technologies.
I am concerned that the use of AI in tourism will increase ethical and privacy problems in the sector.	Highlights broader ethical and privacy concerns associated with digitalization.

Note. Positive statements emphasized AI's potential to enhance customer experience, efficiency, sustainability, personal development, and innovation. Negative statements reflected student

concerns regarding job insecurity, diminished human interaction, unfair competition, stress, and ethical/privacy risks.

2.4. Procedure

Participants were tested individually in a quiet laboratory environment. Before the main task, each participant completed a **10-second baseline recording with eyes closed**. This reference period was used to compute relative EEG power values, ensuring that responses to stimuli reflected changes above each participant's baseline. Following the baseline, each AI statement was presented on a computer screen for **10 seconds**. During this period, participants were instructed to read and reflect on the statement. At the onset of each trial, a digital marker was inserted into the EEG recording to synchronize brain activity with stimulus presentation.

2.5. Data Analysis

All analyses were performed in **Python (version 3.10)** using standard scientific libraries. EEG preprocessing and feature extraction were conducted with **MNE-Python**, numerical operations with **NumPy** and **pandas**, and statistical analyses with **SciPy** and **statsmodels**. Visualization was carried out in **Matplotlib** and **Seaborn**. Mean values of valence, arousal, AW index, and alpha ERD/ERS were computed for each participant under their assigned condition (positive vs. negative). Independent-samples t-tests were applied to compare the groups across the indices.

3. RESULTS

The EEG results revealed clear differences in hospitality students' neurophysiological responses to positive versus negative AI-related stimuli. Overall, positive AI statements (highlighting benefits such as increased efficiency or new opportunities) elicited predominantly positive emotional reactions and a calmer neural state. In contrast, negative AI statements (emphasizing threats like job insecurity or reduced human interaction) provoked negative emotional responses and heightened arousal. Figures 1–4 summarize these findings across four key EEG indices – emotional valence, arousal, the approach–withdrawal (AW) index, and alpha band ERD/ERS – each of which is detailed below. Throughout, we interpret these results in the context of tourism and hospitality, noting implications for technology acceptance and emotional preparedness in the industry.

3.1. Emotional Valence Responses

The valence analysis revealed that students' emotional reactions were strongly aligned with the sentiment of the AI-related statements, but with nuanced differences depending on the content of each item. Positive AI-related statements generally elicited higher valence values, signaling more positive affect, whereas negative statements were associated with lower or negative valence, reflecting more negative emotions (Figure 1).

For instance, when students read that *“AI systems are essential for enhancing customer experience in the tourism sector”* or that *“AI-powered applications can improve the efficiency of tourism businesses,”* their EEG-derived valence values were markedly positive. This suggests that themes such as customer service enhancement and operational efficiency resonate positively with tourism students, reinforcing an optimistic view of AI's potential to enrich the industry. Similarly, statements emphasizing *sustainability and resource management* also elicited positive valence, indicating that students associate AI with forward-looking and socially responsible practices in tourism – an increasingly central theme in the field.

By contrast, negative statements triggered a shift toward negative valence, underscoring students' sensitivity to the potential threats of AI. The strongest negative reactions emerged in response to statements about *job insecurity* (e.g., "AI systems may replace human employees") and *the reduction of human interaction in tourism services*. These results highlight that while students are enthusiastic about efficiency and innovation, they are equally attuned to the core human values of hospitality – authenticity, interpersonal connection, and stable employment. Ethical and privacy concerns also pushed valence into the negative range, suggesting that students are aware of broader societal debates surrounding AI beyond immediate operational issues.

Taken together, these findings demonstrate a **dual emotional orientation**: optimism when AI is framed as a tool for innovation, sustainability, and personal development, but caution and negativity when it is portrayed as a threat to human roles, fairness, and ethics. This duality mirrors the ambivalence reported in hospitality literature, where employees and students alike view AI as both an enabler of progress and a source of risk. In line with prior studies noting that younger hospitality cohorts tend to hold more favorable views of AI-driven service innovations while still acknowledging their disruptive potential, our results indicate that students are emotionally receptive to AI's advantages while remaining mindful of its downsides. This cognitive-emotional balance suggests that they are not naïvely enthusiastic nor dismissively resistant, but are instead developing a critical awareness of AI's complex role in the future of tourism.

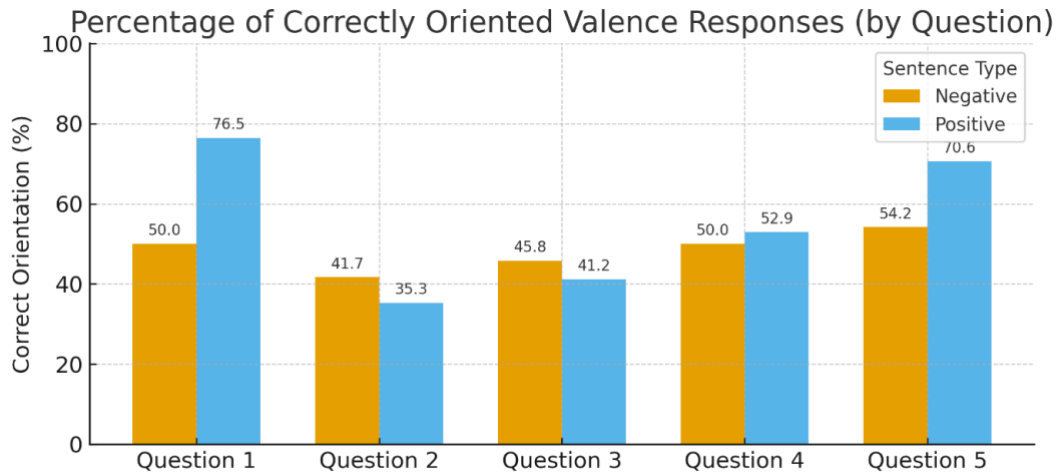


Figure 1. Percentage of students whose EEG-derived valence responses matched the expected orientation (positive valence for positive AI statements; negative valence for negative AI statements).

Results show that tourism students consistently exhibited positive emotional reactions to AI's potential benefits (e.g., improved customer experience, efficiency, sustainability) and negative emotional reactions to AI's potential threats (e.g., job insecurity, loss of human interaction, ethical concerns), indicating a clear alignment between stimulus sentiment and neural affective responses.

The arousal data provided deeper insight into how the content of AI-related statements shaped students' physiological reactions. Across the five items, **negative AI statements consistently evoked higher arousal levels** compared to positive statements, indicating that potential threats were more emotionally and cognitively activating for tourism students (Figure 2).

The strongest arousal increases appeared when participants read statements about **job insecurity** (“AI systems may replace human employees in the tourism sector”) and **reduced human interaction** (“AI-supported customer service systems will reduce human relationships in tourism”). Both issues strike at the heart of the hospitality profession, which is deeply reliant on human labor and authentic social encounters. The heightened physiological arousal suggests that students not only recognized these threats but also experienced stress and vigilance while processing them. Similarly, concerns about **ethics and privacy** (“AI will increase ethical and privacy problems in tourism”) triggered above-average arousal, pointing to awareness that digitalization can bring complex challenges beyond operational tasks.

By contrast, the **positive statements** produced more modest arousal levels overall. For example, references to **improved efficiency** (“AI-powered applications can improve the efficiency of tourism businesses”) and **enhanced customer experience** (“AI systems are essential for enhancing customer experience”) did not excite all students equally. While some students showed slight increases in arousal, many remained calm or disengaged, reflecting a relatively neutral stance toward AI’s promised benefits. Interestingly, even statements about **sustainability and resource management**, which align with students’ awareness of responsible tourism, elicited lower arousal than negative items. This pattern suggests that positive narratives may be cognitively accepted but do not generate the same visceral urgency as negative ones.

Taken together, these results reinforce a **negativity bias** in students’ neurophysiological responses: threats to employment, interpersonal interaction, and ethics provoked stronger bodily reactions than promises of efficiency, sustainability, or innovation. From an industry perspective, this means that while students intellectually value AI’s potential contributions, their emotional systems are more powerfully mobilized by risks. If unmanaged, such heightened arousal in response to negative narratives could translate into anxiety or resistance in workplace contexts where AI adoption is rapid. Conversely, the subdued arousal toward positive statements may indicate that managers and educators cannot assume enthusiasm for AI’s benefits will arise automatically. Instead, they may need to actively frame and demonstrate those benefits in ways that are emotionally engaging, ensuring that the next generation of hospitality professionals perceives AI not only as useful but also as exciting and motivating.

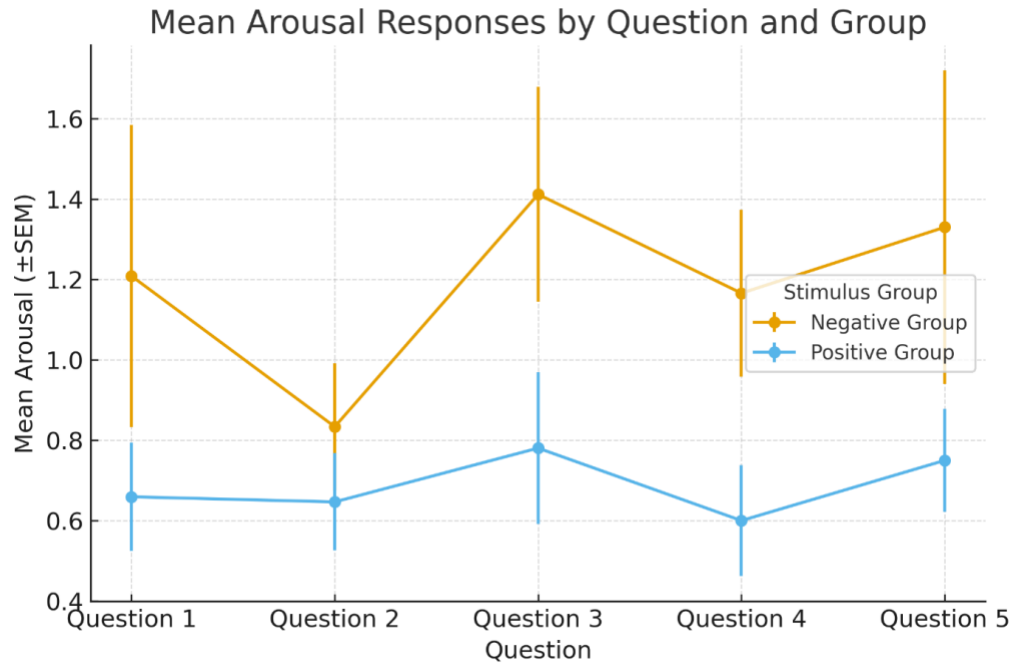


Figure 2. Mean EEG arousal responses to positive versus negative AI-related statements across five items.

In Figure 2, negative statements concerning job insecurity, reduced human interaction, and ethical/privacy risks elicited consistently higher arousal, indicating heightened vigilance and stress. Positive statements about efficiency, customer experience, sustainability, and innovation generated comparatively lower arousal, suggesting that while students intellectually recognized these benefits, they did not evoke the same level of physiological activation.

3.2. Approach-Withdrawal (AW) Index

The AW index, derived from frontal EEG asymmetry, was used to assess approach versus withdrawal tendencies. Positive values reflect greater attentional engagement or “approach,” while negative values reflect withdrawal or avoidance. The results revealed a consistent pattern: **negative AI-related statements elicited a higher and more positive AW index than positive statements** (Figure 3). On average, students exhibited approach-oriented responses when confronted with threats such as *job insecurity* or *loss of human interaction*. Rather than disengaging, they leaned in cognitively, directing more attention toward the negative content. This heightened vigilance, when considered alongside the elevated arousal results, points to a state of strong emotional and cognitive engagement with AI’s potential downsides. Students were not only unsettled by these threats but also motivated to process and evaluate their implications actively.

This finding aligns with prior hospitality research showing that employees’ awareness of service robots and AI tends to sharpen perceptions of **job insecurity and role disruption** (Parvez et al., 2022). Our student sample, as future entry-level employees, appears similarly sensitive to threats: they interpret negative AI narratives as cues requiring closer attention. This can be understood as a form of proactive coping or realism, reflecting the students’ willingness to prepare for challenges mentally AI may bring to their careers.

In contrast, the AW index for **positive AI statements** (e.g., improved efficiency, sustainability, or innovation opportunities) remained closer to neutral, sometimes even slightly negative. This suggests a lower degree of engagement with AI's benefits. Combined with the arousal findings, this indicates that while students acknowledged the value of AI's potential advantages, these benefits did not trigger the same urgency or focused attention as the threats did. From a hospitality management standpoint, this pattern highlights a critical gap: students may take the positive narratives for granted, while reacting strongly to the risks. As earlier research notes, junior or entry-level employees tend to perceive AI's risks more acutely than managers do, which may explain why the students in our study showed stronger engagement with threats than with opportunities.

For industry leaders and educators, this insight carries practical implications. If left unaddressed, such asymmetry in engagement may limit students' motivation to embrace AI positively. Training programs and experiential learning with AI tools could help increase attentional engagement with the benefits, balancing out the natural vigilance these future professionals display toward the risks. By reframing AI as both a supportive and enabling resource, managers may reduce the fear-driven vigilance and cultivate a more balanced, opportunity-oriented mindset in the workforce.

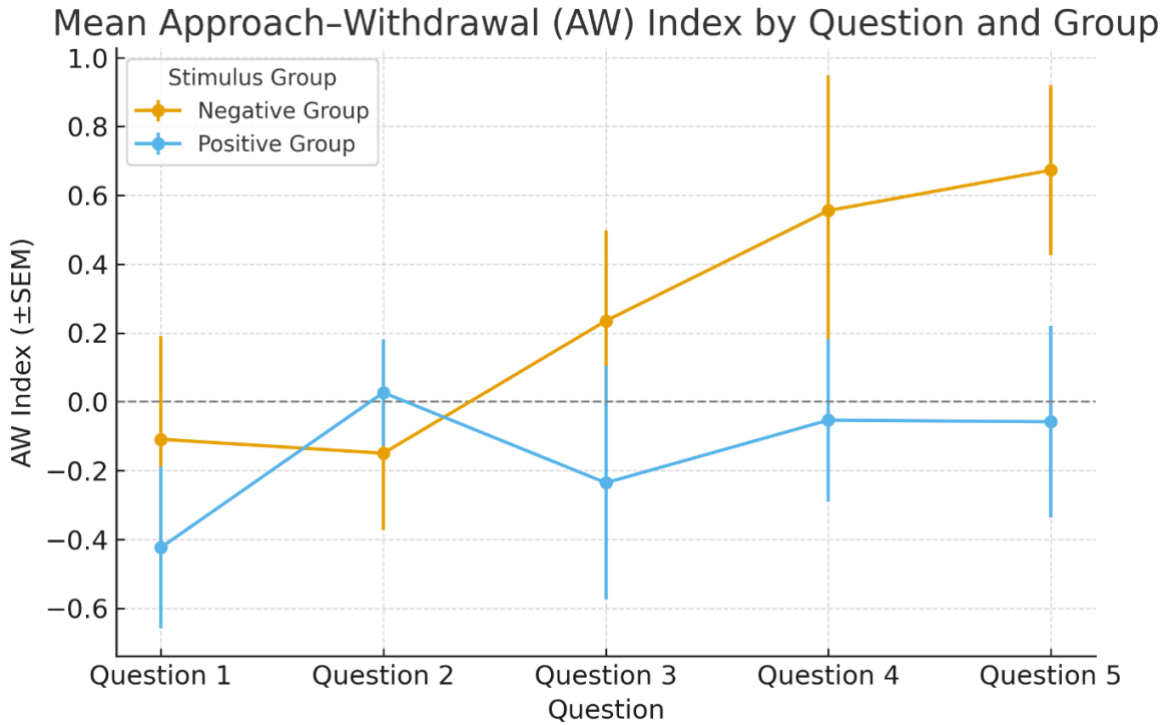


Figure 3. Mean Approach-Withdrawal (AW) index for positive and negative AI-related statements.

In Figure 3, positive values indicate approach-oriented attentional engagement, whereas negative values indicate withdrawal or avoidance. Results show that negative AI statements (e.g., threats to job security, loss of human interaction) elicited a consistently higher AW index, suggesting heightened vigilance and cognitive engagement. In contrast, positive AI statements (e.g., efficiency, sustainability, innovation) generated lower or near-neutral AW index values, reflecting less urgent attentional investment.

Alpha Band ERD/ERS Patterns

The alpha band (8–12 Hz) analysis provided further insight into the students' mental states under each condition. Positive values (ERS) typically reflect increased alpha synchronization, linked to relaxation, comfort, and lower cognitive load. In contrast, negative values (ERD) indicate desynchronization, usually associated with stress, focused attention, or active information processing. Strikingly, **positive AI-related statements produced higher ERS values**, while **negative statements were associated with ERD** (Figure 4).

This means that when students encountered positive narratives about AI—such as *improving customer experience, enhancing efficiency, or contributing to sustainability*—their brains responded with greater alpha synchronization. This pattern reflects comfort and ease, suggesting that students not only cognitively recognized the advantages of AI but also experienced them emotionally as reassuring and optimistic. By contrast, when faced with negative narratives—such as *job insecurity, reduced human interaction, or ethical/privacy concerns*—students exhibited alpha desynchronization, reflecting a more stressed and cognitively demanding state.

These results complement the valence, arousal, and AW index findings, together painting a coherent picture of students' dual orientation toward AI. In positive scenarios, students showed **positive valence, low arousal, and alpha ERS**, a profile consistent with **pleasant relaxation and openness**. This is encouraging from an industry perspective: students appear emotionally prepared to accept AI's benefits, which may facilitate smoother technology adoption in hospitality settings. In negative scenarios, however, the profile was reversed: **negative valence, high arousal, high AW index, and alpha ERD**, indicating **heightened vigilance, stress, and mental effort**. This suggests that students not only recognized AI threats but also actively allocated cognitive resources to evaluating them.

If such reactions are mirrored in the workplace, they could manifest as **resistance to AI adoption or even increased turnover intentions**. Indeed, recent hospitality research highlights how employees' perception of AI as a job threat can fuel anxiety and withdrawal from the profession (Lu et al., 2019; Koo et al., 2021). On a positive note, our data also show that students did not disengage when confronted with risks; the approach-oriented AW index implies active coping and awareness rather than avoidance. This opens an opportunity for educators and managers: **by providing clear communication, training, and reassurance**, they can redirect this vigilance into constructive engagement, helping students view AI as an augmenting tool rather than a replacement.

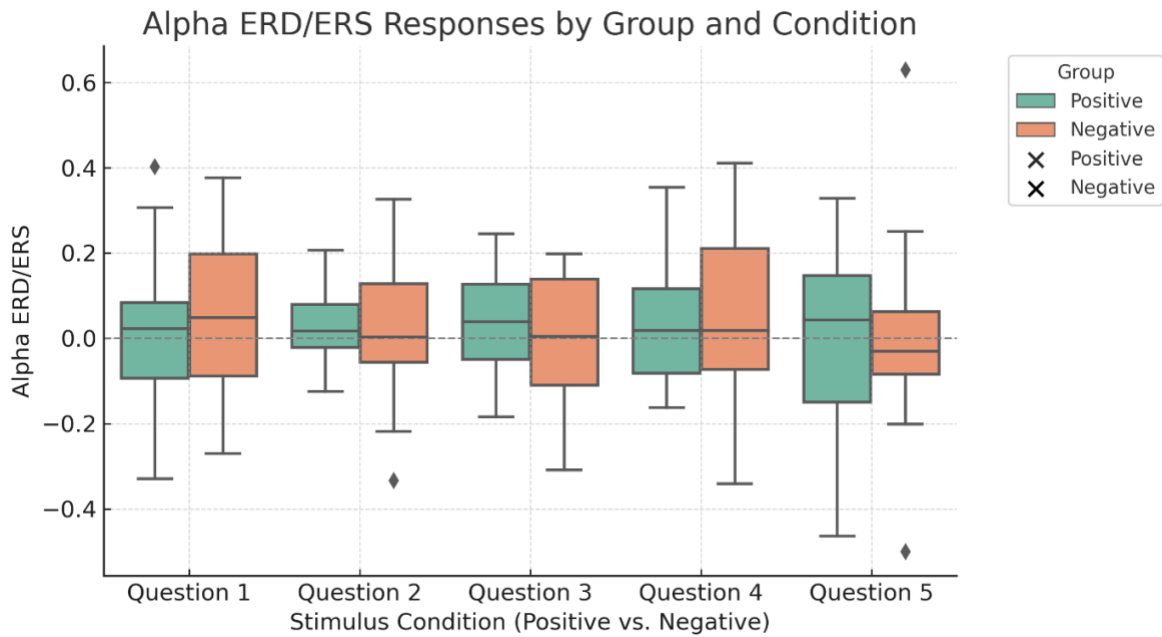


Figure 4. Distribution of Alpha ERD/ERS responses across positive and negative AI-related statements.

In Figure 4, positive ERS values indicate increased alpha synchronization (reflecting relaxation, positive affect, and lower cognitive load), whereas negative ERD values indicate alpha desynchronization (reflecting stress, attentional focus, and greater mental effort). Results show that positive AI statements (e.g., improved customer experience, efficiency, sustainability) elicited higher ERS, consistent with ease and optimism, while negative AI statements (e.g., job insecurity, reduced human interaction, ethical/privacy concerns) induced ERD, reflecting heightened stress and cognitive engagement.

4. DISCUSSION AND CONCLUSION

This study contributes to tourism and hospitality research by providing novel neurophysiological evidence of how future professionals process narratives about artificial intelligence (AI). Using EEG-derived measures of emotional valence, arousal, the approach-withdrawal (AW) index, and alpha ERD/ERS, we demonstrated that students' responses systematically differed between positive and negative AI-related statements. Importantly, these findings extend beyond self-reported perceptions by revealing implicit emotional and attentional processes, thereby offering a richer understanding of technology acceptance in tourism education and workforce development. As today's students will soon become tomorrow's managers, employees, and decision-makers, understanding how they subconsciously process AI-related narratives offers valuable foresight into how the future hospitality workforce may engage with, adopt, and shape AI-driven practices in the industry.

Our results reveal a clear duality in students' responses to AI. Positive statements—such as AI's potential to improve customer experience, enhance efficiency, or contribute to sustainability—were associated with positive valence, low arousal, and alpha synchronization (ERS). This pattern reflects comfort, optimism, and openness, suggesting that students are emotionally receptive to AI's promised advantages. From a managerial perspective, such openness is a positive signal for the

future integration of AI in hospitality, as it indicates a willingness to embrace technological change when it is framed as beneficial and supportive. This receptivity also suggests that students entering the workforce may be predisposed to championing AI-driven innovations early in their careers, which could accelerate organizational adoption and reduce resistance to change at the entry level.

Conversely, negative statements—such as AI threatening jobs, reducing human interaction, or raising ethical and privacy concerns—were linked to negative valence, higher arousal, elevated AW index, and alpha desynchronization (ERD). This profile indicates heightened vigilance, stress, and cognitive effort, showing that students not only recognized AI's risks but also actively engaged with them. The strong attentional orientation to threats highlights that these young professionals are critically aware of the challenges AI may bring to their careers. This finding mirrors prior hospitality research showing that frontline employees often perceive AI as a source of anxiety and job insecurity (Lu et al., 2019; Koo et al., 2021). For tourism students specifically, this vigilance may reflect legitimate concerns about job security and career trajectory in an industry undergoing rapid technological transformation, underscoring the need for career guidance that directly addresses these anxieties before students enter the workforce.

Taken together, these results suggest that students are neither naively optimistic nor wholly resistant to AI. Rather, they hold a balanced cognitive–emotional stance, simultaneously appreciating its benefits while remaining vigilant about its risks. This nuanced profile underscores the importance of designing educational curricula and workplace training programs that acknowledge both sides of AI adoption. Such findings carry direct implications for career preparation: by identifying the specific emotional and cognitive patterns that shape students' receptivity to AI, tourism and hospitality programs can better equip graduates with the confidence, adaptability, and critical awareness needed to navigate AI-integrated roles, ultimately supporting more informed career decision-making and smoother workforce transitions.

This research has several strengths. First, it represents one of the few studies to apply EEG in a tourism education context, going beyond surveys and interviews to capture implicit emotional responses. Second, by focusing on tourism students—the future workforce—it provides timely insights into how AI adoption may be received by entry-level professionals, a group whose perceptions will significantly influence industry practices in the coming decade. Understanding these perceptions is particularly valuable for career development purposes, as it allows educators and industry stakeholders to anticipate how graduates will approach AI-related job functions, career choices, and professional development opportunities. Third, the combination of multiple EEG indices (valence, arousal, AW index, alpha ERD/ERS) allowed for a multidimensional understanding of students' affective and cognitive reactions, generating a comprehensive picture of their engagement with AI narratives. Finally, the study design balanced positive and negative stimuli, enabling clear contrasts in neural responses to opportunities versus threats.

4.1. Limitations and Future Research

Despite its contributions, this study has several limitations that open avenues for future research. First, the experiment was conducted with a relatively small sample ($n = 40$) from a single tourism department, which may limit generalizability. Larger and more diverse samples—including students from different cultural and institutional contexts—would strengthen external validity. Second, we employed a portable EEG device (Muse 2), which offers ecological feasibility but lower spatial resolution compared to research-grade EEG systems. Future studies could use high-density EEG to

capture more fine-grained neural dynamics. Third, while we analyzed four established indices, additional neural markers (e.g., theta band oscillations, frontal midline activity) could provide further insights into emotional regulation and cognitive control processes related to AI perception. Finally, our design presented positive and negative statements in isolation. Future work could explore mixed or sequential exposures (e.g., first highlighting risks, then benefits) to examine whether framing effects influence students' responses.

Beyond methodological considerations, future research should also investigate interventions that might moderate students' reactions. For instance, exposure to hands-on AI tools, experiential learning in technology-enhanced hospitality settings, or managerial communication strategies could reduce negative arousal and increase positive engagement. Longitudinal studies could examine whether students' neurophysiological responses evolve as they gain professional experience with AI in real hospitality contexts.

This study demonstrates that tourism management students exhibit distinct emotional and cognitive responses to positive and negative narratives about AI, as captured through EEG measures. Positive statements fostered comfort and openness, while negative statements triggered vigilance, stress, and heightened attention. These findings highlight a dual orientation: students are simultaneously optimistic about AI's potential and cautious about its risks.

By moving beyond self-reported attitudes to neurophysiological evidence, our research provides a unique contribution to hospitality management scholarship. The results underscore the need for educators and managers to design strategies that both amplify students' enthusiasm for AI's benefits and address their concerns about its challenges. Preparing future professionals for a balanced and constructive engagement with AI will be essential for ensuring that technological integration in hospitality enhances—not undermines—the human essence of the industry.

Declaration of Interest Statement

The authors report there are no competing interests to declare.

Declaration of generative AI Use

The authors report that they have used generative AI to support language editing, improve clarity and enhance the readability of the manuscript.

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Impact of EU Sustainable Development Regulations on Vietnam's Textile and Garment Exports: Challenges and Policy Implications

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Abstract

This study examines the impact of European Union (EU) sustainability regulations on Vietnam's garment exports (HS codes 61–63) during 2023–2025, focusing on market access conditions, trade dynamics, and enterprise adaptation. This study combines an analysis of key EU policy frameworks, including the European Green Deal, ESPR, REACH, the Digital Product Passport (DPP), and Extended Producer Responsibility (EPR), with secondary trade data from ITC Trade Map. The findings show that Vietnam's garment exports to the EU increased from USD 6.996 billion in 2023 to USD 9.062 billion in 2025, while its share of total EU imports increased only marginally from 3.32% to 3.81%. This trend suggests that EU sustainability regulations have not been accompanied by an immediate contraction in Vietnam's exports. Rather, they are increasingly becoming structural conditions that influence competitive dynamics by raising requirements related to sustainable materials, chemical safety, digital traceability, and producer responsibility. To overcome compliance bottlenecks, the paper proposes policy solutions at two levels: macro-level institutional, financial, and infrastructural support, alongside enterprise-level investments in technological upgrading, sustainable material sourcing, data governance, and circular supply chain management.

Keywords: EU sustainability regulations, EU trade policy, Vietnamese garment exports, EVFTA, market access.

1. INTRODUCTION

In recent decades, pressing global issues such as climate change, biodiversity loss, resource depletion, and environmental degradation have compelled economies worldwide to pivot from conventional growth models toward green growth and sustainable development. Amid this global transition, the European Union (EU) has positioned itself as a pioneering leader by institutionalizing sustainability goals into actionable policies, technical standards, and market regulations. Through the European Green Deal (EGD), the EU aims to achieve climate neutrality by 2050 while fostering systemic transformations in production and consumption paradigms toward resource efficiency, circularity, and minimized environmental footprints (European Commission, 2019, 2020; Fetting, 2020).

To operationalize these ambitious targets, the EU has progressively established a comprehensive regulatory framework, including the Circular Economy Action Plan, the EU Strategy for Sustainable and Circular Textiles, the Ecodesign for Sustainable Products Regulation (ESPR), the Digital Product Passport (DPP), and the Corporate Sustainability Due Diligence Directive (CSDDD). Departing from previous approaches that relied primarily on voluntary commitments, the EU increasingly utilizes binding legal instruments to embed environmental and sustainability mandates directly into market conditions governing production, circulation, and consumption (European Commission, 2020, 2022, 2024; Leonard et al. 2021; Lopes et al. 2024).

Specifically for the textile and apparel sector, the EU Strategy for Sustainable and Circular Textiles, adopted in 2022, established a clear roadmap for transitioning the industry toward sustainability and circularity. This strategy prioritizes product durability, reusability, repairability, and recyclability, alongside the use of sustainable raw materials, hazardous chemical controls, and the reduction of environmental footprints throughout the product lifecycle (European Commission, 2022). Building on this foundation, the ESPR establishes a comprehensive legal framework that embeds sustainability and circularity criteria into product design, while paving the way for the Digital Product Passport (DPP) to enhance product traceability and information transparency (European Commission, 2020, 2022, 2024). Crucially, these regulatory shifts extend beyond the internal market, exerting spillover effects on third-country suppliers through international trade channels and global value chains (GVCs).

The textile and garment industry represents one of the sectors most profoundly affected by this green transition, given its resource-intensive nature characterized by high consumption of water, energy, and chemicals and significant waste generation across the entire product lifecycle. According to European Commission reports, the textile value chain exerts substantial environmental impacts while relying heavily on primary resources extracted outside the EU (European Commission, 2022). Consequently, the greening of the EU textile sector extends beyond restructuring internal market rules; it imposes imperative adjustment pressures on major exporting economies deeply integrated into global value chains (Sharma et al. 2025).

For Vietnam, the EU serves as both a pivotal export market for the textile and garment sector and a destination characterized by increasingly stringent environmental and sustainability standards. The EU–Vietnam Free Trade Agreement (EVFTA) has substantially facilitated bilateral trade through tariff elimination schedules and enhanced market access (Dinh et al. 2025; Do and Tran, 2021; Dung Nguyen, 2023; Pham, 2026). In 2025, Vietnam’s total merchandise export turnover to the EU-27 reached USD 56.2 billion a year-on-year increase of 8.6% with textiles and garments remaining a key export contributor (WTO and Integration Center, 2026). However, tariff preferences under the EVFTA are increasingly conditioned upon compliance with heightened technical, environmental, and supply chain sustainability benchmarks. Consequently, sustaining and expanding garment exports no longer depends solely on price competitiveness, product quality, or preferential tariffs, but critically hinges on the capacity to monitor raw materials, manage chemical inputs, ensure traceability, and maintain data transparency (Dinh et al. 2025; Do and Tran, 2021).

Shifting market access conditions in the EU demand adaptive transformations across multiple stages of garment production and export operations. Manufacturers are increasingly required to enforce stringent controls over raw material inputs, chemical usage, resource efficiency, waste management, and origin tracking to align with EU environmental standards. For the Vietnamese garment sector, greening the supply chain necessitates substantial capital investment in modern technologies, sustainable inputs, and cleaner production solutions (Nguyen and Le, 2024; Dinh et al. 2025). Furthermore, meeting these technical requirements inflates compliance costs and demands elevated managerial capabilities, particularly as environmental and traceability criteria

become deeply embedded in international trade terms (Dinh et al. 2025; The Hoang, 2025). These mandates pose pronounced challenges for small and medium-sized enterprises (SMEs) constrained by capital, technology, data infrastructure, and supply chain oversight.

Conversely, this adaptive imperative serves as a catalyst for firms to upgrade manufacturing technologies, optimize resource utilization, advance traceability, and transition toward transparent, sustainable supply chain governance (Khac Kien, 2024; The Hoang, 2025). Empirical evidence indicates that green market pressures are driving Vietnamese manufacturers to invest in cleaner production technologies, establish rigorous origin tracking, and adopt sustainable business models (Pham, 2026). Consequently, the impact of EU green mandates should be viewed not merely as short-term compliance costs, but as a strategic driver for long-term capacity building and sustainable competitive advantage.

In this context, the challenge for Vietnam is not only to comply with emerging EU sustainability requirements but also to use these requirements to strengthen the competitiveness of its textile and apparel industry. Examining the evolution of EU regulations, Vietnam's garment export performance in the EU market, and the main challenges facing exporters can provide a clearer basis for understanding the implications of these regulatory changes and identifying appropriate responses. Accordingly, this study addresses three research questions (RQs).

1. How do emerging EU sustainability regulations affect market access conditions for Vietnam's textile and garment industry?
2. What trends characterized Vietnam's garment exports to the EU during 2023–2025, and what do these trends suggest about the sector's adaptation challenges?
3. What policy measures can support Vietnamese garment exporters in meeting evolving EU sustainability requirements and maintaining export competitiveness?

By addressing these questions, the study examines changes in EU market access conditions, assesses Vietnam's recent export trends, and identifies the key adaptation requirements arising from evolving sustainability regulations. It also draws policy implications for supporting Vietnamese garment exporters in meeting these requirements and maintaining their competitiveness in the EU market.

2. RESEARCH METHODOLOGY

This study combines policy analysis with secondary trade data analysis to examine the implications of EU sustainability regulations for Vietnam's garment exports. The policy analysis reviews key EU policy and regulatory frameworks, including the European Green Deal, the EU Strategy for Sustainable and Circular Textiles, the Ecodesign for Sustainable Products Regulation (ESPR; Regulation (EU) 2024/1781), REACH, the Digital Product Passport (DPP), and Extended Producer Responsibility (EPR), with a focus on requirements related to ecodesign and product durability, sustainable materials and circularity, chemical safety, digital traceability, product information, and producer responsibility.

Secondary trade data were obtained from the International Trade Centre (ITC) Trade Map for Vietnam's exports to the EU during 2023–2025, covering HS 61, HS 62, and HS 63. The analysis examines export values, annual growth, market shares, and the distribution of exports across EU member states.

Descriptive analysis is used to identify changes in trade performance and export patterns over the study period, while policy analysis provides the regulatory context for interpreting these trends. The findings from the two analytical components are considered together to assess how

evolving EU sustainability requirements are changing market access conditions and creating adaptation requirements for Vietnamese garment exporters.

3. RESULTS AND DISCUSSION

3.1. The European Union's green regulatory framework for the textile and garment sector

In its systemic transition toward a green and circular economic model, the EU has identified textiles and garments as a priority value chain requiring immediate improvements in resource efficiency and environmental footprint reduction. This strategic trajectory is anchored within the European Green Deal, which targets climate neutrality across the EU by 2050, and is further operationalized through the Circular Economy Action Plan (CEAP) (European Commission, 2020, 2022).

For the textile sector, the CEAP provides a framework for extending policy attention beyond environmental impacts during production to sustainability across the product lifecycle, including design, raw material sourcing, manufacturing, use, and end-of-life management (European Commission, 2022). Building on this framework, the European Commission introduced the EU Strategy for Sustainable and Circular Textiles in March 2022. The strategy sets out measures to improve product durability, repairability, reusability, and recyclability, while promoting the use of recycled materials, restricting hazardous substances, and improving transparency across the value chain (European Commission, 2022). These policy directions were subsequently translated into binding regulatory requirements, with the ESPR playing a central role in establishing ecodesign requirements and other sustainability criteria for products.

At the product design stage, the ESPR (Regulation (EU) 2024/1781) establishes requirements related to durability, reusability, repairability, recyclability, resource efficiency, recycled content, and substances of concern for relevant product categories (European Commission, 2022, 2024). These requirements make product design and material selection increasingly important for access to the EU market. For Vietnamese exporters, this means greater attention to material composition and sourcing, as well as the need to maintain reliable information and documentation to substantiate sustainability-related product claims.

Chemical safety requirements are also expanding in scope, extending beyond final product characteristics to raw material sourcing and manufacturing processes. The EU addresses hazardous substances through chemical policy frameworks, particularly REACH and the Chemicals Strategy for Sustainability, with requirements that apply across the product lifecycle. In the textile and apparel sector, these requirements are particularly relevant to dyeing and finishing processes, which involve substantial use of chemical inputs. At the same time, the EU is developing measures to address microplastic pollution, including microplastic release from synthetic textile fibres (European Commission, 2020, 2022; European Parliament and Council of the European Union, 2025a, 2025b). For Vietnamese exporters, these developments increase the need to control chemical inputs throughout the production process, from raw material sourcing and processing to final finishing, rather than relying solely on conformity testing of finished products.

Alongside requirements for materials, chemical safety, and manufacturing processes, the EU is placing increasing emphasis on product traceability and information transparency. The DPP, established under the ESPR framework, provides a standardized structure for recording and sharing product information based on criteria defined for specific product groups (European Parliament and Council of the European Union, 2025a, 2025b). In the textile and garment sector, this mechanism increases the need for reliable data on material composition, input origins,

sustainability characteristics, and information relevant to product use, reuse, and recycling. Consequently, the ability to collect, manage, verify, and share product data is becoming an important complement to manufacturing capabilities, enabling enterprises to demonstrate compliance with EU market requirements.

Taken together, the EU's sustainability framework for the textile and garment sector extends compliance requirements beyond individual product characteristics to different stages of the product lifecycle, including ecodesign, material sourcing, manufacturing, traceability, and end-of-life management. Building on the objectives of the European Green Deal and the CEAP, these requirements are further developed through the EU Strategy for Sustainable and Circular Textiles and reflected in key instruments such as the ESPR, REACH, DPP, and EPR. For non-EU manufacturers, their effects are transmitted not only through applicable EU regulatory requirements but also through international brands, importers, and retailers, which increasingly incorporate sustainability requirements into technical specifications, material sourcing, data disclosure, and supplier selection.

This transmission mechanism fundamentally reshapes competitive dynamics for Vietnamese garment exporters in the EU market. Beyond conventional advantages in unit cost, craftsmanship quality, and lead times, exporters must increasingly satisfy rigorous benchmarks regarding sustainable raw materials, hazardous chemical controls, cleaner production technologies, traceability, and data governance. While these mandates elevate compliance costs and capital expenditure requirements in the short term, they simultaneously serve as a strategic catalyst for upgrading manufacturing technologies, optimizing resource efficiency, and enhancing supply chain governance. The specific extent and empirical manifestations of these regulatory impacts must be further analyzed against real-world trade dynamics between Vietnam and the EU (Dinh et al. 2025; Do and Tran, 2021; Khac Kien, 2024; Pham, 2026; The Hoang, 2025).

3.2. Status of Vietnamese garment exports to the EU over the 2023–2025 period

Over the 2023–2025 period, Vietnam's garment exports to the EU maintained an upward trajectory amidst expanding sustainability mandates across the single market. This trend underlines the persistent strategic importance of the EU market for Vietnam's garment sector. However, export enterprises must navigate increasingly complex market access conditions that extend beyond traditional factors such as price competitiveness, product quality, and lead times to encompass material composition, production processes, supply chain traceability, and environmental disclosures (WTO and Integration Center, 2026). Consequently, an empirical assessment of current export performance requires a simultaneous examination of trade volume, structural composition, and emerging requirements regarding supply chain capacity.

According to the data in Table 1, the total value of EU imports under HS codes 61–63 from Vietnam expanded from USD 6.996 billion in 2023 to USD 7.448 billion in 2024, reaching USD 9.062 billion in 2025 representing a cumulative growth of approximately 29.5% over the entire period. This upward surge was predominantly concentrated in 2025, driven by a 21.7% year-on-year increase compared to 2024, following a modest growth of 6.5% in 2024. These empirical results demonstrate that Vietnamese garment exports continued to scale up within the EU market during the analyzed timeframe. However, descriptive trade data alone do not provide sufficient causal evidence to attribute this export expansion directly to the EVFTA or to emerging EU green policies. Export outcomes remain susceptible to broader macroeconomic factors, including end-consumer demand, price levels, ordering cycles, supply chain capacity, and shifting global market conditions. Consequently, this study utilizes secondary trade metrics primarily to map macro export trajectories and structural compositions, while evaluating the impacts of EU

sustainability mandates through their transmission mechanisms onto market access conditions and enterprise compliance capabilities.

Table 1. EU imports of garments (HS 61–63) from Vietnam and world (2023–2025)

Product code	Product label	EU Imports from Viet Nam (2023) [USD '000]	EU Imports from Viet Nam (2024) [USD '000]	EU Imports from Viet Nam (2025) [USD '000]	EU Imports from World (2023) [USD '000]	EU Imports from World (2024) [USD '000]	EU Imports from World (2025) [USD '000]
'61	Articles of apparel and clothing accessories, knitted or crocheted	2,792,020	3,133,800	3,835,437	96,408,724	100,514,435	110,623,089
'62	Articles of apparel and clothing accessories, not knitted or crocheted	3,820,995	3,937,725	4,768,985	92,783,310	94,615,608	103,627,548
'63	Other made-up textile articles; sets; worn clothing and worn textile articles; rags	382,943	376,422	457,305	21,350,280	21,724,550	23,646,082
Total		6,995,958	7,447,947	9,061,727	210,542,314	216,854,593	237,896,719

Source: Author's calculations based on International Trade Centre (ITC) Trade Map database (2025).

An analysis of the export structure demonstrates that Vietnam's trade flows to the EU are heavily concentrated in two primary apparel categories. Based on the empirical data, in 2025, HS 62 reached USD 4.769 billion, while HS 61 attained USD 3.835 billion; combined, these two categories accounted for approximately 95% of total export value within HS 61–63. HS 63 recorded a smaller scale, totaling approximately USD 457.3 million. This structural composition confirms that finished garments constitute the core component of Vietnam's textile and apparel exports to the EU. This pattern carries critical strategic implications for the sector's adaptation to green policies, as emerging EU mandates concerning ecodesign, material composition, chemical safety, product durability, recyclability, and information traceability exert a direct impact on the product groups that dominate export volumes.

Growth dynamics also varied across product chapters. Over the 2023–2025 period, HS 61 grew by 37.4%, outpacing the 24.8% expansion of HS 62 and the 19.4% increase of HS 63. In 2025 alone, HS 61 and HS 62 recorded year-on-year growth rates of 22.4% and 21.1%, respectively, compared to 2024. Consequently, all primary apparel categories achieved notable expansion during the period under study. While these empirical results indicate no immediate decline in export value resulting from green trade requirements, they should not be construed as evidence that Vietnamese enterprises have fully adapted to these new mandates. A key factor is that numerous EU regulatory frameworks for sustainable products are being phased in according to multi-year

roadmaps, whereas commercial standards enforced by global brand owners and importers are often implemented ahead of statutory deadlines through supply chain governance mechanisms.

An assessment of Vietnam's position within the EU market import structure reveals that the total value of EU imports under these product categories from global suppliers expanded from approximately USD 210.5 billion in 2023 to USD 237.9 billion in 2025. Over the same period, imports sourced from Vietnam grew from USD 6.996 billion to USD 9.062 billion. Consequently, Vietnam's market share in the EU increased from roughly 3.32% to 3.81%. Although this gain in market share reflects an improved trade standing, it has not yet altered the overall market supply equilibrium within the EU. Notably, while the value of EU imports from Vietnam accelerated rapidly in 2025, the EU simultaneously expanded its import volumes from alternative supply sources. This dynamic indicates that Vietnam's ability to boost export turnover does not automatically equate to the establishment of a sustainable long-term competitive advantage.

An analysis of the transmission mechanisms through which green mandates impact Vietnam's garment export performance reveals an upward export trend to the EU over the 2023–2025 period. However, these aggregate trade figures do not provide sufficient empirical grounds to attribute this export growth directly to the EU's green policy framework. Instead, the real impact of these regulatory mandates must be evaluated through shifts in the conditions required to maintain and expand bilateral trade relationships. We conceptualize this transmission mechanism as a multi-stage process: EU Green Regulations → Brand/Importer Requirements → Enterprise Compliance Capacity and Costs → Order Retention and Expansion Potential → Export Outcomes.

For Vietnamese enterprises, these regulatory pressures converge on three core operational capabilities: (i) sustainable raw material sourcing and production technology; (ii) data governance and traceability systems; and (iii) supply chain management capabilities. In the short term, the adaptive transition inevitably elevates capital expenditure and compliance costs. Over the long term, however, it serves as a critical driver for technological upgrading, resource optimization, and the modernization of managerial capabilities. Consequently, rising export turnover should not be misinterpreted as a diminishing impact of green trade barriers. Rather, the long-term retention and expansion of market share in the EU will increasingly hinge on an enterprise's capacity to translate regulatory requirements concerning products, materials, chemicals, and data into concrete operational capabilities.

3.3. Policy implications and strategic solutions for enhancing adaptive capacity in Vietnam's garment industry

The empirical findings presented in Section 3.2 indicate that while Vietnam's garment exports to the EU maintained an upward trajectory during the 2023–2025 period, Vietnam's market share within total EU garment imports remains modest. Concurrently, EU market mandates are progressively broadening from immediate product attributes to encompass raw material sourcing, chemical controls, supply chain traceability, data transparency, and end-of-life management. Consequently, sustaining and expanding long-term export market share will increasingly depend on the adaptive capacity of export enterprises, complemented by enabling institutional support systems. On this basis, the study proposes a two-tiered framework of policy implications and strategic solutions: (i) macro-level institutional policy and support mechanisms; and (ii) firm-level operational capacity transformation.

At the macro level, the primary priority is to refine the policy environment and strengthen institutional support mechanisms for the green transition within the textile and garment sector. Governmental authorities and sectoral ministries must systematically operationalize circular economy objectives, resource efficiency mandates, chemical safety controls, and emissions

reduction targets within national industrial development strategies, ensuring seamless alignment with the stringent requirements of the EU market. Beyond regulatory alignment, policymakers should develop financial and technical assistance tools to mitigate transition costs, particularly for small and medium-sized enterprises (SMEs). Expanding green credit lines, facilitating technology innovation grants, and funding energy-efficiency and waste/wastewater management initiatives will lower initial capital barriers, thereby accelerating enterprise compliance with global environmental standards.

Second, strengthening data infrastructure, product traceability, and technical support frameworks represents a critical policy imperative. The findings in Section 3.2 highlight that emerging mandates such as the Digital Product Passport (DPP), material provenance verification, and mandatory information disclosure impose escalating demands on enterprise data governance capabilities. Consequently, regulatory authorities and industry support institutions must establish unified information portals to disseminate EU regulatory updates, assist firms in identifying applicable compliance metrics across specific product categories, and guide the deployment of interoperable traceability systems. In this regard, the Vietnam Textile and Apparel Association (VITAS) and relevant sectoral agencies should serve as strategic intermediaries actively curating policy intelligence, delivering specialized training modules, and formulating operational readiness assessment frameworks for export enterprises. This institutional intervention is particularly vital for small and medium-sized enterprises (SMEs), which face structural resource constraints in technical expertise and digital infrastructure investments.

Third, public policy must actively foster the development of a sustainable and circular domestic raw material supply chain. Heavy reliance on imported inputs not only compromises an enterprise's ability to verify material provenance and environmental attributes, but also constrains its strategic agility in meeting evolving EU buyer specifications. Therefore, policy incentives should target capital investment in recycled fiber production, eco-certified textiles, and sustainable input materials. Concurrently, government frameworks must promote horizontal and vertical integration among garment manufacturers, raw material suppliers, recycling facilities, and research institutions. Building a cohesive industrial ecosystem will effectively reduce firm-level compliance expenditure while elevating domestic value addition across the sector.

At the firm level, the strategic focus must shift from reactive compliance with isolated mandates toward the establishment of an integrated sustainable governance capability. First and foremost, export enterprises must conduct comprehensive value chain audits spanning raw material selection, eco-design, manufacturing, and waste management operations to identify critical operational bottlenecks that could impair EU market access. Strategic capital investments in energy-efficient technologies, water and material optimization, hazardous chemical controls, and waste minimization should be pursued not merely to fulfill regulatory compliance, but as a strategic mechanism to enhance long-term cost efficiency.

Furthermore, enterprises must systematically bolster their supply chain data governance and traceability capabilities. Information regarding material provenance, chemical composition, manufacturing processes, and environmental metrics should be captured and standardized right from the upstream echelons of the supply chain. For firms deeply embedded in EU value chains, robust data management is no longer merely a compliance requirement, but has rapidly become a core benchmark in supplier selection and evaluation frameworks. Consequently, investments in digital data management systems and supplier-interoperable data sharing infrastructure should be framed as an integral component of a firm's long-term competitive strategy.

Finally, export enterprises must progressively move up the global value chain, diminishing their reliance on pure Cut-Make-Trim (CMT) contract manufacturing while expanding strategic autonomy over raw material sourcing, eco-design, and product stewardship. Fostering stronger backward linkages with sustainable material suppliers both domestically and regionally will simultaneously enhance provenance verification, ensure compliance with environmental standards, and optimize utilization of EVFTA rules of origin. This strategic pivot serves as the baseline for enterprises to transition from cost-based competition toward a sustainable value proposition anchored in product quality, operational agility, total traceability, and environmental compliance capacity.

The policy implications derived from this study do not advocate for the immediate, wholesale adoption of EU standards within Vietnam; rather, they emphasize the gradual cultivation of adaptive capacity through a phased roadmap. At the national level, the priority lies in establishing a supportive policy, financial, technological, and informational environment to facilitate enterprise transition. At the firm level, effort must center on upgrading capabilities in raw material sourcing, production practices, data governance, and supply chain management. This dual-track alignment will enable enterprises not only to fulfill current EU market requirements, but also to build proactive resilience against the ongoing expansion of green trade mandates in the coming years.

4. CONCLUSION

This study demonstrates that the EU's green policy framework for the textile and garment sector is undergoing a paradigmatic shift transitioning from narrow environmental impact mitigation toward comprehensive sustainability management across the entire product life cycle. Emerging regulatory requirements regarding eco-design, chemical safety, supply chain traceability, the Digital Product Passport (DPP), and Extended Producer Responsibility (EPR) are progressively expanding the compliance perimeter from the final product to upstream material sourcing, production processes, data governance, and post-consumer waste management (European Commission, 2020, 2022; European Parliament and Council of the European Union, 2024).

The empirical analysis reveals that Vietnam's garment exports to the EU expanded from USD 6.996 billion in 2023 to USD 9.062 billion in 2025, accompanied by a modest increase in market share from approximately 3.32% to 3.81%. However, aggregate trade metrics alone are insufficient to establish direct causal links between this turnover growth and the implementation of the EVFTA or EU green policies. A more fundamental finding of this study is that EU environmental mandates are fundamentally reshaping the conditions required to maintain and expand bilateral trade relationships. This transmission occurs primarily through brand and importer specifications regarding sustainable raw materials, chemical safety, product traceability, data management, and supply chain governance.

Therefore, enhancing the long-term competitiveness of Vietnam's garment sector requires a simultaneous focus on technological upgrading, sustainable raw material transitions, data governance, product traceability, and supply chain modernization. At the policy level, public interventions must expand financial, technological, and informational support mechanisms while accelerating the development of a sustainable domestic raw material base. At the firm level, export enterprises must proactively embed sustainability metrics directly into their production processes and supply chain management practices. This dual alignment establishes a strategic baseline for the textile and garment industry to transform green trade mandates from external compliance pressures into an internal catalyst for upgrading industrial competitiveness within the EU market.

This study relies primarily on policy analysis and secondary trade data aggregated at the HS 61–63 level, which precludes the empirical quantification of direct causal relationships between specific green regulations and export performance outcomes. Future research could utilize firm-level datasets to rigorously evaluate compliance costs and measure the granular impacts of distinct sustainability mandates on enterprise export competitiveness.

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Digital Reputation Formation through Customer Complaints: Evidence from Far Eastern Restaurants in an Urban Context

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Abstract

This study examines how recurring complaint patterns in user-generated reviews shape digital reputation formation for Far Eastern restaurants in Ankara. Using a purposive sample of 860 TripAdvisor reviews collected between 2015 and 2025 (117 complaint-containing reviews; 122 coded complaint instances), we integrate Social Identity Theory (SIT) and the Cultural Adaptation Model (CAM) to propose a three-step mechanism wherein perceived cultural authenticity mediates identity-congruence effects on reputational vulnerability, while adaptation strategies moderate these relations. Methodologically, the paper combines theory-informed thematic coding with quantitative content analysis (temporal comparisons, co-occurrence matrices, intra-brand dispersion; CV = 0.43) to link qualitative complaint themes to measurable reputation dynamics. Results show that service quality, food quality, and staff attitude are the principal drivers of negative evaluations; perceptions of inauthenticity amplify negative judgments and frequently co-occur with operational failures. A descriptive post-pandemic increase in hygiene complaints is observed but does not survive conservative multiple-comparison correction. Managerial implications include integrated complaint management, authenticity-sensitive marketing, and targeted staff training to mitigate user-generated reputational risk. The study contributes a socio-cultural, process-oriented account of digital reputation in ethnically framed hospitality contexts and offers a replicable mixed-methods approach for future comparative research.

Keywords: Digital reputation, Customer complaints, Online reviews, eWOM, Ethnic restaurants.

1. INTRODUCTION

The rapid expansion of digital platforms has transformed reputation management into a critical strategic function for service firms, particularly in experience-based sectors such as hospitality. Online reviews, social media interactions, and real-time customer feedback increasingly shape how businesses are evaluated, trusted, and chosen (Hennig-Thurau *et al.*, 2004; Litvin *et al.*, 2008; Cheung & Thadani, 2012). While prior research has extensively examined digital reputation in general service contexts (Hennig-Thurau *et al.*, 2004; Ye *et al.*, 2011; Cheung & Thadani, 2012; Sparks & Browning, 2011), considerably less attention has been paid to how reputation is constructed and contested in culturally embedded consumption settings such as ethnic restaurants.

Ethnic restaurants offer a unique context in which digital reputation is driven not only by service quality but also by perceptions of cultural authenticity and alignment with identity. Customers often evaluate such businesses through culturally loaded expectations, where authenticity, adaptation, and symbolic meaning intersect (Liu & Jang, 2009).

However, existing studies tend to examine either digital reputation mechanisms (Litvin *et al.*, 2008; Filieri & McLeay, 2014; Ye *et al.*, 2011) or cultural authenticity (Liu & Jang, 2009; Wang, 1999; MacCannell, 1973) in isolation, offering limited insight into how these dimensions interact in shaping consumer evaluations in online environments. This creates a critical gap in understanding the socio-cultural dynamics underpinning digital reputation in multicultural urban markets.

To address this gap, this study integrates Social Identity Theory (SIT) (Tajfel & Turner, 1979) and the Cultural Adaptation Model (CAM) (Hofstede, 2001) to develop a theoretically grounded framework explaining how consumers interpret and respond to ethnic restaurant experiences in digital platforms. SIT suggests that consumers evaluate brands through group affiliation congruence and in-group/out-group dynamics, while CAM highlights the tension between maintaining cultural authenticity and adapting to local preferences. The study proposes that digital reputation emerges from the interaction of identity-based evaluations and adaptation strategies.

Empirically, the study examines online customer reviews of Far Eastern restaurants in Ankara, a multicultural urban setting where diverse cultural expectations intersect. Using qualitative content analysis, the research explores how complaints, evaluations, and interaction patterns reflect deeper tensions between authenticity and adaptation in digital environments.

Against this background, this study addresses the following research question: How do recurring customer complaint patterns shape digital reputation dynamics in ethnic restaurant contexts, and what role do perceived cultural authenticity and identity-based evaluations play in this process?

Building on this aim, this study makes three key contributions to the literature on digital reputation and hospitality management. *First, it advances existing research by demonstrating empirically that complaint-driven reputational vulnerability in ethnic restaurant contexts is shaped not merely by service failure frequency, but by identity-based evaluative processes through which cultural expectations are negotiated in digital environments. This extends prior work on cumulative digital reputation (Litvin et al., 2008; Sparks & Browning, 2011) by providing a theoretically grounded, socio-cultural explanation of complaint patterns. Second, by systematically integrating Social Identity Theory (SIT) and the Cultural Adaptation Model (CAM), the study offers a novel analytical lens through which perceived authenticity is operationalised as a mechanism linking group affiliation congruence and digital reputation outcomes. Unlike prior studies that treat authenticity as a product attribute (Liu & Jang, 2009; Kolar & Zabkar, 2010), this study conceptualises authenticity as a relational, identity-laden evaluative construct co-produced through user-generated content. Third, methodologically, the study contributes by combining theory-informed qualitative coding with quantitative content analysis techniques—including temporal comparison, co-occurrence analysis, and intra-brand variation—thereby offering a structured, empirically grounded pathway for linking complaint patterns with reputation dynamics in ethnic service contexts.*

2. CONCEPTUAL FRAMEWORK

2.1. Digital Reputation Formation in Social Media Ecosystems

Digital reputation has evolved into a multidimensional, dynamic system that extends beyond traditional service quality metrics (Litvin *et al.*, 2008; Filieri & McLeay, 2014; Sparks & Browning,

2011; Yu et al., 2021). In this context, consumers rely heavily on online reviews and shared experiences when forming perceptions of service quality and brand credibility, reinforcing the co-created and socially constructed nature of digital reputation.

Within this framework, social media platforms play a central role in shaping and disseminating digital reputation. Online reviews, influencer content, and peer-to-peer communication constitute the primary mechanisms through which consumers interpret service experiences and evaluate brands. Empirical evidence suggests that social media marketing elements—such as interactivity, entertainment, and customisation—positively influence trust and brand-related outcomes, which in turn shape behavioural intentions (Kim & Ko, 2012). Moreover, user-generated content and eWOM have been identified as critical drivers of consumer trust and decision-making processes in digital environments (Litvin et al., 2008; Filieri & McLeay, 2014; Tao et al., 2022).

Importantly, digital reputation formation is inherently asymmetric. Negative information tends to spread more rapidly and exert a stronger influence than positive content, thereby increasing reputational vulnerability and underscoring the importance of proactive, responsive reputation management strategies (Sparks & Browning, 2011; Chevalier & Mayzlin, 2006). This asymmetry reflects the well-documented negativity bias in consumer behaviour, whereby unfavourable experiences are more likely to be shared and have a greater impact on decision-making processes (Baumeister et al., 2001; Litvin et al., 2008).

Overall, digital reputation emerges as a dynamic, socially constructed, and platform-dependent phenomenon, shaped by the interplay between user-generated content, social media interaction, and algorithmic amplification mechanisms. This integrated perspective highlights the need for organisations to adopt continuous, data-driven, and engagement-oriented approaches to reputation management in digital environments.

2.2. Cultural Authenticity in Digitally Mediated Consumption

In culturally embedded service contexts such as ethnic restaurants, digital reputation is strongly influenced by perceptions of cultural authenticity. Authenticity is widely conceptualised not as an objective attribute but as a socially constructed perception shaped by symbolic cues, narratives, and consumer interpretations (Beverland, 2005; Kolar & Zabkar, 2010). In hospitality settings, authenticity has been consistently linked to customer satisfaction, trust, and behavioural intentions, particularly in experiences involving cultural consumption (Liu & Jang, 2009).

Recent research has emphasised that digital environments increasingly mediate perceptions of authenticity. Online platforms enable consumers to form expectations prior to direct experience through visual content, peer reviews, and storytelling, thereby shifting authenticity from a purely experiential construct to a pre-consumption evaluative framework (Filieri & McLeay, 2014; Jeong & Jang, 2011). In this context, authenticity is conveyed through digitally transmitted signals, such as food presentation, ambience representation, and culturally embedded narratives, rather than solely through physical interaction.

Moreover, studies indicate that user-generated content plays a critical role in shaping perceived authenticity. Online reviews often reflect not only service evaluations but also subjective interpretations of whether an experience aligns with culturally constructed expectations (Lu & Stepchenkova, 2015). This suggests that authenticity in digital environments is continuously negotiated and co-created among consumers, rather than being controlled by firms, as user-generated

narratives and peer evaluations actively shape collective meanings of authenticity (Vargo & Lusch, 2008; Rihova et al., 2018).

Cross-cultural research also shows that perceived authenticity is closely tied to cultural congruence and alignment of expectations. When there is a mismatch between the cultural signals the restaurant sends and consumers' expectations, dissatisfaction is more likely, particularly in multicultural urban settings (Kim & Lee, 2020). This issue becomes even more salient in digitally mediated contexts, where expectations are formed through indirect exposure and may be amplified by algorithmic visibility and social influence.

More recent research suggests that authenticity perceptions in online environments are closely intertwined with trust formation and reputation dynamics. Specifically, authenticity cues embedded in digital content enhance perceived credibility, which in turn strengthens digital reputation (Sparks & Browning, 2011). However, these processes are highly sensitive to inconsistencies, as discrepancies between online representations and actual experiences can lead to negative evaluations and reputational damage (Jeong & Jang, 2011; Litvin et al., 2008).

In sum, the literature suggests that cultural authenticity in digitally mediated consumption is a dynamic, interpretive, and socially constructed process. It emerges through the interaction of symbolic representation, consumer expectations, and digital communication, making it a central determinant of how ethnic restaurants are evaluated in online environments.

2.3. Social Identity Theory and Identity-Based Evaluations

Social Identity Theory (SIT) posits that individuals derive part of their self-concept from their membership in social groups, and these group affiliations shape perceptions, attitudes, and behaviours (Tajfel & Turner, 1979). In consumption contexts, this implies that evaluations are not purely based on functional attributes but are influenced by self-concept alignment, symbolic meaning, and perceived group belonging.

Recent research has significantly expanded Social Identity Theory (SIT) by examining its role in digitally mediated environments. Digital platforms are no longer passive communication channels but active spaces where identities are constructed, displayed, and negotiated through continuous interaction (Belk, 2013; Hollenbeck & Kaikati, 2012). In these environments, consumers actively perform and express their identities through online content, interactions, and symbolic consumption practices, thereby reinforcing the role of digital platforms in self-concept formation.

Moreover, empirical studies demonstrate that cultural belonging cues embedded in digital environments significantly influence user behaviour, opinions, and evaluative judgments. Identity markers such as names, profiles, and culturally embedded signals shape how content is perceived and trusted, indicating that evaluations are deeply rooted in identity-based processes rather than purely rational assessments (Forman et al., 2008; Stets & Burke, 2000). In digitally mediated environments, users rely on such social and identity cues to interpret information, assess credibility, and form attitudes toward brands and services.

Of particular note, identity processes in digital environments are not only individual but also collective and networked. Research indicates that social identity plays a crucial role in shaping interaction patterns, social integration, and the construction of shared meaning within online communities (Muniz & O'Guinn, 2001). In digitally mediated environments, individuals interpret

experiences through collective frames of reference, and meanings are co-constructed through ongoing interactions among community members (Kozinets, 2002; Schau et al., 2009).

In the context of ethnic restaurants, these dynamics become particularly salient (Liu & Jang, 2009; Mak et al., 2012; Reed et al., 2012). Consumers evaluate their experiences not only through service quality but also through group affiliation congruence—whether the experience aligns with their cultural expectations, values, and symbolic affiliations (Reed et al., 2012; Stets & Burke, 2000). Online reviews, therefore, can be understood as identity-laden narratives reflecting cultural proximity, perceived authenticity, and group-based interpretations.

Research highlights that digital environments amplify identity-based evaluations through algorithmic visibility and social validation mechanisms, as identity-consistent content attracts greater engagement and is more widely disseminated, thereby reinforcing existing reputational perceptions (DeVito, 2017; Messing & Westwood, 2014). In this digitally mediated context, algorithmic curation and user interaction patterns jointly reinforce identity-aligned interpretations and evaluations.

Building on these insights, this study conceptualises digital reputation as partially constructed through identity-based evaluations. Specifically, perceived cultural authenticity influences digital reputation by enhancing identity congruence, while misalignment between expected and perceived cultural signals may trigger negative evaluations driven by out-group perceptions.

2.4. Cultural Adaptation and the Authenticity–Adaptation Paradox

While cultural authenticity is widely recognised as a key determinant of positive consumer evaluations in ethnic service contexts (Wang, 1999; MacCannell, 1973; Morhart et al., 2015), businesses operating in cross-cultural environments face a fundamental strategic dilemma: balancing authenticity with adaptation. This tension, often conceptualised as the authenticity–adaptation paradox (Wang, 1999; Sims, 2009), reflects the challenge of preserving original cultural characteristics while simultaneously meeting the expectations of local consumers.

The Cultural Adaptation Model (CAM) suggests that firms entering foreign cultural contexts must adjust their offerings to align with local norms, preferences, and consumption habits (Hofstede, 2001). In the context of ethnic restaurants, such adaptation may include modifications in menu composition, ingredient sourcing, service style, or even the symbolic presentation of cultural elements. However, adaptation is not a neutral process; it directly influences how authenticity is perceived and evaluated by consumers.

Recent research shows that authenticity and adaptation are not mutually exclusive but rather exist in a dynamic, context-dependent relationship. Moderate levels of adaptation may enhance accessibility and reduce perceived cultural distance, thereby improving customer satisfaction (Liu & Jang, 2009). In contrast, excessive adaptation may dilute cultural signals, leading to perceptions of inauthenticity and ultimately undermining brand credibility (Kolar & Zabkar, 2010; Beverland, 2005; Morhart et al., 2015; Mak et al., 2012). This suggests a nonlinear relationship in which both insufficient and excessive adaptation can generate negative evaluations.

This paradox becomes particularly salient in digitally mediated environments. Online platforms expose cultural signals to diverse and global audiences, each with different expectations and interpretive frameworks. As a result, the same adaptation strategy may be perceived positively by one group while being criticized by another. Research shows that digital environments amplify this

tension by enabling consumers to publicly evaluate, contest, and reinterpret authenticity claims in real time through user-generated content and online reviews (Litvin et al., 2008; Kozinets, 2002).

In addition, algorithmic dynamics and social influence mechanisms intensify the visibility of these evaluations. Content perceived as controversial or emotionally engaging—such as accusations of inauthenticity or cultural misrepresentation—is more likely to be shared and amplified, increasing reputational risk (Lou & Yuan, 2019). This creates a feedback loop in which authenticity-related evaluations become central drivers of digital reputation formation.

Importantly, the literature emphasises that authenticity is not a fixed attribute but a negotiated, co-created construct. Consumers actively interpret cultural signals based on their own identity frameworks, prior experiences, and expectations (Kolar & Zabkar, 2010; Beverland, 2005; Morhart et al., 2015; Sims, 2009). In this sense, adaptation strategies do not directly determine outcomes; rather, their impact depends on how they are interpreted within specific socio-cultural contexts, as meanings are constructed through consumer perceptions and interactions rather than being inherently embedded in the offering itself (Vargo & Lusch, 2008; Cohen, 1988).

Extending this reasoning, this study conceptualizes the authenticity–adaptation paradox as a key mechanism shaping digital reputation. Adaptation strategies influence reputation indirectly by altering perceived authenticity, while the direction and magnitude of this effect depend on identity-based interpretations and digital amplification processes. Effective digital reputation management therefore requires operational improvements and a nuanced understanding of how cultural signals are interpreted and disseminated online.

2.5. Toward an Integrated Theoretical Mechanism

Building on the preceding theoretical discussions (Tajfel & Turner, 1979; Hofstede, 2001; Wang, 1999; MacCannell, 1973; Vargo & Lusch, 2008), this study advances an integrated theoretical mechanism explaining how digital reputation is constructed in culturally embedded service contexts. Rather than treating reputation as a direct outcome of service performance, recent research conceptualises it as a socially constructed, interaction-driven process shaped by identity, interpretation, and dynamics of digital amplification (Litvin et al., 2008; Sparks & Browning, 2011; Forman et al., 2008).

In digitally mediated settings, evaluations increasingly reflect identity-based processes. Social Identity Theory posits that individuals interpret experiences via group membership and cultural affiliation; digital platforms amplify these processes through continuous identity construction and social feedback (Gonzales & Hancock, 2011). These processes contribute to identity-consistent evaluative patterns, whereby consumers are more likely to appraise experiences in ways that align with their existing beliefs and cultural affiliations, thereby shaping the content and tone of user-generated digital evaluations (Messing & Westwood, 2014).

At the same time, the Cultural Adaptation Model (CAM) highlights that firms operating in cross-cultural contexts must navigate the tension between maintaining authenticity and adapting to local expectations. *Recent research suggests that this tension is increasingly negotiated in digital environments, where consumers publicly evaluate authenticity claims and cultural signals* (Litvin et al., 2008; Kozinets, 2002; Mak et al., 2012). This creates a paradoxical dynamic in which authenticity and adaptation simultaneously function as complementary and conflicting forces.

Integrating these perspectives, the study proposes that digital reputation forms via three interrelated processes. Perceived cultural authenticity serves as a primary cue whose effects are mediated by

identity-congruence mechanisms. When consumers perceive alignment between the cultural signals a restaurant presents and their own identity frameworks, evaluations tend to be positive. Conversely, perceived cultural distance may trigger negative evaluations shaped by out-group perceptions.

Second, cultural adaptation strategies act as a moderating force. Adaptation can either strengthen or weaken perceptions of authenticity, depending on how consumers interpret it. Moderate adaptation may enhance accessibility and familiarity, whereas excessive adaptation may undermine perceived authenticity. This reflects the authenticity–adaptation paradox highlighted in recent cross-cultural research.

Third, digital platform dynamics amplify and reinforce these processes. Algorithmic visibility, social validation (e.g., likes, shares), and user-generated content contribute to the diffusion and reinforcement of identity-based evaluations. Research shows that digital environments strengthen feedback loops, in which identity-consistent interpretations are more likely to be selected, engaged with, and amplified, thereby shaping collective perceptions and reputational outcomes (DeVito, 2017; Messing & Westwood, 2014).

Notably, these processes are not independent but interact dynamically. Identity congruence influences how adaptation strategies are interpreted, while digital platforms reinforce or attenuate these interpretations through visibility and engagement mechanisms. As a result, digital reputation emerges as a socially constructed outcome shaped by the interaction between cultural authenticity, identity-based evaluation, and adaptation strategies within digitally mediated environments.

This integrated mechanism contributes to the literature by moving beyond linear and performance-based explanations of reputation, offering a socio-cultural and process-oriented understanding of how digital reputation is formed in ethnic service contexts.

It is important to distinguish the analytical orientation of this study from service-dominant logic (SDL; Vargo & Lusch, 2008), with which it shares some conceptual vocabulary. SDL conceptualises value as co-created through customer–firm interaction and positions the customer as an active participant in service production. While this perspective is consistent with our emphasis on the co-constructed nature of digital reputation, SDL does not theorise the identity-based mechanisms through which cultural signals are interpreted, nor does it account for the role of algorithmic amplification in selectively disseminating identity-consistent evaluations. Our framework extends beyond SDL by foregrounding the socio-psychological processes—specifically, identity congruence and out-group perceptions—that mediate the link between cultural signals and reputational outcomes in digitally mediated ethnic service contexts.

3. METHOD

3.1. Research Design

This study adopts a qualitative research design supported by quantitative content analysis to examine how digital reputation is constructed through customer complaints in ethnic restaurant contexts. Given the interpretive and socially constructed nature of online reviews, qualitative content analysis provides a suitable methodological framework for systematically identifying patterns, meanings, and themes within user-generated textual data (Hsieh & Shannon, 2005; Elo & Kyngäs, 2008).

To enhance analytical rigour and address potential methodological limitations, the study incorporates a complementary quantitative component. Specifically, the frequency and distribution

of themes, co-occurrence patterns, and temporal variations are analyzed to support and validate qualitative interpretations. This mixed-method approach enables a more robust and comprehensive understanding of digital reputation dynamics.

3.2. Data Source and Sampling Strategy

The empirical data were collected from Tripadvisor, one of the most widely used online review platforms in the hospitality sector. Selecting a single platform ensures consistency in review structure, rating systems, and user interaction formats, thereby enhancing internal validity and comparability. A purposive sampling strategy was employed to identify Far Eastern restaurants operating in Ankara, Türkiye. Restaurants were included based on the following criteria: (i) a minimum threshold of customer reviews (at least 20 reviews), (ii) active engagement and visibility on the platform, and (iii) representation of Far Eastern cuisine.

For the purposes of this study, 'Far Eastern cuisine' encompasses Chinese (including regional variants such as Uyghur cuisine), Japanese, and related East Asian culinary traditions, as represented by the ten restaurants in the sample. The sample comprises four Chinese chain restaurant branches (Quick China – Çayyolu, Bilkent, GOP, Ümitköy), two independent Chinese restaurants (Guangzhou Wuyang, Great Wall), one Chinese-fusion restaurant (Chinabloom Ankara), one Uyghur restaurant (Urumci Uyghur Restaurant), one Japanese restaurant (Chef Izakaya), and one Japanese-fusion restaurant (SushiCo Panora). While meaningful culinary differences exist between these traditions, all share the characteristic of being perceived as culturally 'foreign' and 'exotic' by the majority of Turkish consumers, which makes them particularly suitable for examining authenticity expectations and identity-based evaluations.

Based on these criteria, ten restaurants were selected for analysis. The dataset comprises 860 user reviews (1 January 2015–1 June 2025). For the reputational risk analysis, we extracted 117 reviews that contained at least one explicit complaint. Because a single review could address multiple topics, the total number of coded complaint instances was 122.

The selection of complaint-based reviews followed a systematic two-stage filtering process. First, reviews were screened using keyword-based criteria (e.g., 'poor,' 'terrible') to identify negative sentiment. Second, all selected reviews were manually verified to ensure they contained explicit dissatisfaction with service, food quality, authenticity, or the overall experience. This combined approach minimized selection bias and ensured the dataset's analytical relevance.

The selection of Ankara as the study context warrants brief contextualisation. As Turkey's capital and second-largest metropolitan area, Ankara is characterised by a demographically diverse population, a substantial expatriate and student community, and a growing market for international cuisine. Far Eastern restaurants have expanded significantly in Ankara over the past decade, catering to both Turkish and internationally mobile consumers. This context provides a particularly suitable empirical setting for examining how cultural authenticity expectations and identity-based evaluations interact in digitally mediated consumption, as Ankara's multicultural urban landscape generates diverse and sometimes conflicting expectations of ethnic cuisine (cf. Kim & Lee, 2020). It should be noted, however, that the Turkish cultural context may influence complaint patterns in ways that limit direct transferability to other national settings; specifically, Turkish consumers' familiarity with East Asian cultures, their distance from these cultural referents, and the institutional regulation of food labelling in Turkey may shape authenticity perceptions differently than in contexts with established East Asian diaspora communities.

3.3. Data Preparation

All reviews were anonymized prior to analysis to ensure compliance with ethical research standards. Reviews written in English were translated into Turkish to maintain linguistic consistency during coding.

Reviews written in English (n = 34) were first translated into Turkish by the lead researcher, who is bilingual in both languages. To ensure semantic accuracy and preserve the cultural specificity of complaints, a back-translation procedure was subsequently conducted: the Turkish translations were independently re-translated into English by a second bilingual researcher who had not seen the original English reviews. Discrepancies between the original and back-translated versions were identified, discussed, and resolved through iterative revision until semantic equivalence was confirmed. This procedure minimised the risk of meaning distortion, particularly for culturally loaded expressions of dissatisfaction.

Each review was segmented into meaningful analytical units, enabling fine-grained coding and thematic categorisation. This segmentation enabled the identification of multiple issues within a single review, thereby increasing analytical depth.

3.4. Data Analysis Procedure

The study employed a multi-stage qualitative content analysis process informed by the six-phase thematic analysis framework proposed by Braun and Clarke (2006). Phase 1 involved repeated reading of all selected reviews to achieve data familiarisation. Phase 2 entailed the systematic generation of initial codes by identifying meaningful textual units relevant to the research question. In Phase 3, codes were sorted and grouped into potential themes. Phase 4 involved reviewing and refining the themes to ensure coherence and analytical fit with the dataset. Phase 5 entailed clearly defining and naming each theme with precise operational definitions. Phase 6 involved producing the analytic narrative, incorporating representative quotations to illustrate the themes (Braun & Clarke, 2006). This transparent, iterative process enhanced the credibility and transferability of the thematic analysis.

The coding process followed a hybrid approach combining deductive and inductive strategies. Initially, a preliminary coding framework was developed based on established literature on online complaints and service failure (e.g., Litvin et al., 2008; Sparks & Browning, 2011). Subsequently, new codes emerging from the data were incorporated to capture context-specific patterns.

A pilot coding phase was conducted using a subset of the data to refine the coding scheme. Based on this phase, codes were revised, merged, or expanded to improve clarity and consistency. Following calibration, the full dataset was coded using MAXQDA. The final coding structure comprised multiple themes: service quality, food presentation and taste, hygiene, price-performance ratio, staff attitude, waiting time, and ambience. Each theme was further operationalised into subcodes representing specific complaint types.

To strengthen the theory–data linkage, the coding process was explicitly informed by the two theoretical frameworks underpinning the study. SIT-derived codes were developed to capture identity congruence (e.g., alignment or misalignment between expected cultural identity and experienced service), in-group evaluations (e.g., positive expectations from culturally similar consumers), and out-group perceptions (e.g., expressions of cultural distance or disappointment). CAM-derived codes were developed to identify adaptation-related complaints (e.g., perceived over-localisation of menus or ambience), authenticity failures (e.g., taste, presentation, or cultural representation inconsistencies), and authenticity–adaptation tensions (e.g., complaints reflecting simultaneous expectations of cultural fidelity and local accessibility). A coding manual

operationalising these constructs was developed prior to analysis and applied consistently across all complaint-based reviews.

This transparent, iterative process enhanced the credibility and transferability of the thematic analysis (Braun & Clarke, 2006). In practical terms, the thematic analysis was applied at the level of meaningful complaint units rather than entire reviews, facilitating the capture of secondary experiential cues. Following this, thematic clusters were cross-referenced against SIT and CAM frameworks to ensure that coding reflected not just descriptive categories, but conceptually grounded identity-based evaluations.

3.5. Quantitative Content Analysis

To strengthen the study's analytical robustness, qualitative findings were complemented by quantitative content analysis. First, the frequency and percentage distribution of themes and sub-themes were calculated to identify dominant patterns of customer dissatisfaction. Second, a co-occurrence analysis was conducted to examine relationships among themes, revealing how different types of complaints are interconnected.

Third, a temporal comparison was conducted to examine differences between the pre-pandemic (2015–2019) and post-pandemic (2020–2025) periods. This analysis is instrumental to the research question as it assesses whether the drivers of reputational vulnerability are persistent or context-contingent, thereby clarifying the evolving nature of digital reputation dynamics. Where appropriate, basic statistical tests (e.g., chi-square tests) were employed to assess whether observed differences between periods were statistically significant. These analyses provided additional support for interpreting qualitative findings.

3.6. Reliability and Validity

Several measures were taken to ensure the reliability and validity of the analysis.

First, to assess inter-coder reliability, a second independent coder—a researcher with expertise in qualitative hospitality research—analysed a randomly selected subset comprising 20% of the complaint-based reviews ($n = 23$). Initial coding discrepancies were identified and discussed until consensus was reached. Cohen's Kappa coefficient ($\kappa = .82$) was calculated, indicating strong inter-rater agreement according to established benchmarks in qualitative content analysis (Krippendorff, 2004; Landis & Koch, 1977). This level of agreement confirms the consistency and replicability of the coding scheme.

Second, analytical transparency was maintained through systematic documentation of analytical decisions and coding procedures. Third, methodological triangulation was achieved by integrating qualitative and quantitative analyses, enhancing the credibility and robustness of the findings (Denzin, 1978; Patton, 1999). Finally, the use of direct quotations in the findings section supports interpretive validity by grounding the analysis in the original data.

4. FINDINGS

The findings are presented in five analytical stages, each of which addresses a distinct facet of the research question concerning how complaint patterns shape digital reputation dynamics in ethnic restaurant contexts. First, the overall rating distribution (Table 1) establishes the baseline evaluative profile of the restaurants. Second, the restaurant-level rating comparison (Table 2) reveals inter-establishment variation in reputational standing. Third, the thematic and code-based complaint distribution (Table 3) identifies the core drivers of customer dissatisfaction and provides the empirical foundation for the theoretical interpretations that follow. Fourth, the temporal analysis (Tables 4–5) examines how complaint patterns have evolved over time, situating the findings within a dynamic understanding of digital reputation. Fifth, the intra-brand variation analysis

(Table 6) and co-occurrence matrix (Table 7) provide structural and relational insights into how complaint patterns interact to produce cumulative reputational disadvantages. Taken together, these analyses form a coherent, multi-dimensional portrait of complaint-driven reputational vulnerability in the studied ethnic restaurant context.

Table 1. Distribution of TripAdvisor Ratings

Category	Number of Comments	(%)
Excellent	364	42.3
Very good	289	33.6
Average	90	10.4
Poor	42	4.8
Terrible	75	8.7
Total	860	100.0

This study analysed 860 user reviews of Far Eastern restaurants on Tripadvisor.com (2025), categorised according to the platform's five-point rating system ('excellent', 'very good', 'average', 'poor', and 'terrible'). Of the 860 reviews, 117 contained at least one explicit complaint, yielding 122 coded complaint instances across all themes (see Table 3). While the majority of reviews are positive or neutral, negative reviews provide critical insight into sources of customer dissatisfaction and potential reputational risks.

As shown in Table 1, positive evaluations ('excellent' and 'very good') account for a substantial proportion of the dataset, whereas negative evaluations ('poor' and 'terrible') account for a smaller share. However, despite their lower frequency, complaint-based reviews offer disproportionately rich insights into service failures and unmet expectations. This pattern is consistent with the well-established asymmetry in online evaluations, where negative experiences tend to carry greater diagnostic value in shaping consumer perceptions.

Table 2. Customer Evaluation Distribution in Far East Restaurants

Restaurant Name	Excellent (%)	Very good (%)	Average (%)	Poor (%)	Terrible (%)
Quick China (Cayyolu)	47.5	31.2	6.2	5.0	10.0
Quick China (Bilkent)	30.3	38.4	15.2	6.0	10.1
Quick China (GOP)	34.2	41.2	8.6	4.8	11.2
Great Wall Restaurant	32.5	35.0	15.0	2.5	15.0
Guangzhou Wuyang	49.0	25.5	10.2	5.1	10.2
Chef Izakaya	54.2	4.2	8.3	16.7	16.7
SushiCo (Panora)	25.0	35.0	22.5	10.0	7.5
Quick China (Umitkoy)	51.5	29.7	9.6	5.4	3.6
Chinabloom Ankara	62.5	19.4	8.3	4.1	5.5
Urumci Uyghur Restaurant	50.0	39.3	9.1	0.0	1.5

Table 2 further demonstrates variation across restaurants in terms of rating distributions. While some establishments (e.g., Chinabloom Ankara and Urumci Uyghur Restaurant) receive a higher proportion of positive evaluations, others (e.g., Chef Izakaya and Great Wall Restaurant) exhibit relatively higher shares of negative ratings. These differences suggest that digital reputation is not

uniform across establishments but is shaped by restaurant-specific performance in service delivery and customer experience.

The thematic analysis of complaint-based reviews (Table 3) reveals that customer dissatisfaction is primarily concentrated around service quality, food quality, and staff attitude. Service-related complaints frequently include slow service, inattentive staff, order confusion, and waiter indifference. Food-related issues primarily concern lack of expected flavour, raw or improper cooking, and deviations from anticipated taste profiles. Complaints regarding staff attitude emphasize perceived disrespectful behaviour and lack of effective communication.

Additionally, hygiene problems (e.g., dirty tables, dirty packaging) and waiting time (e.g., delayed service, table waiting time) emerge as recurrent but secondary themes. Across ten restaurants, the highest complaint volumes are observed at Quick China (GOP) with 30 complaints, predominantly driven by service (n=9) and food quality (n=8), while intra-brand variation among Quick China branches (12–30 complaints) suggests inconsistent branch-level service delivery. The thematic distribution in Table 3 was interpreted using the pre-specified SIT- and CAM-derived coding framework; representative illustrative quotations are provided below.

Table 3. Thematic and Code-Based Distribution of Customer Complaints in Restaurants

Restaurant Name	Service Quality	Food Quality	Price/Performance	Hygiene	Waiting Time	Staff Attitude	Ambience	Reservation Problem	Total Complaints
Quick China (Cayyol)	2	3	1	1	1	2	1	1	12
Quick China (Bilkent)	4	2	1	2	3	3	1	1	17
Quick China (GOP)	9	8	3	2	2	4	1	1	30
Great Wall Restaurant	1	3	1	1	0	2	0	0	8
Guangzhou Wuyang Chef	4	2	1	4	1	3	1	1	17
Izakaya SushiCo (Panora)	1	1	1	1	2	1	1	0	8
Quick China (Umitkoy)	1	1	1	1	2	1	0	0	7
Quick China (Umitkoy)	6	2	1	1	1	3	1	0	15
Chinabloom Ankara	1	1	1	1	1	1	1	0	7
Urumci Uyghur Restaurant	0	1	0	0	0	0	0	0	1
Total	29	24	11	14	13	20	7	4	122

Ambience and food quality complaints (combined n = 44) were most closely associated with CAM-derived authenticity failure codes, wherein consumers explicitly articulated discrepancies between expected cultural representation and perceived delivery—a pattern particularly evident across restaurants marketing Uyghur and Japanese cuisines. Adaptation tension codes were most salient in price–performance (n = 4) and ambience-related complaints (n = 20), where consumers

simultaneously expressed expectations of cultural fidelity and dissatisfaction with perceived over-localisation of the culinary offering. These distributional patterns indicate that the theoretical constructs of SIT and CAM are differentially activated across complaint themes—not uniformly distributed—providing empirical grounding for the integrated theoretical mechanism advanced in Section 2.5 and demonstrating that authenticity-related evaluations are not reducible to operational service failure alone. To illustrate the thematic patterns identified in Table 3, the following verbatim customer quotations from the analysed TripAdvisor reviews are presented as exemplary cases.

" How disappointing! These were the worst sushis I have ever had! Even my 5-year-old nephew could cut fish better! I still keep a 2 star because Thai food seemed ok, although I didn't taste it. "

" The service quality was bad, the food was small in portions and there was almost no meat in the soups. "

" This place is a joke. Extremely slow service. We waited for 45 minutes for service. Then they cancelled all sushi orders. We were very angry. They made us pay for the drinks we had while waiting for the food. "

" Nice food, poor service. Main meal missed from our group. Waited and waited for the wine until we had finished our meal. Appetisers arrived after our main course. "

" A disgraceful experience, the worst Quick China branch in Ankara. On 11/01/2024, I made a reservation for 4 people; when we arrived at the right time, our table was not ready. "

The following additional quotations further illustrate staff attitude, hygiene, expectation–experience mismatches, and perceived value concerns:

[Staff attitude] *"But the waiters showed little interest. We constantly had to call for things. "*

[Hygiene] *"The restaurant served our meal with a broken plate. I called an authorised person to file a complaint. One waiter called another waiter and they tried to pass my complaint. I could not even find an admin to report this to. "*

[Expectation–experience mismatch] *"This is one of our favourite restaurants, and the last time we were there the service was terrible. Our main course came just after our soups were served; by the time we finished the soups, the main courses were already cold. "*

[Price–performance] *"They cancelled all sushi orders, yet they made us pay for the drinks we had while waiting for the food. This is simply unacceptable. "*

These examples illustrate that customer dissatisfaction is often multidimensional, combining issues related to service efficiency, food quality, hygiene, and perceived value.

4.1. Authenticity as an Evaluative Dimension: Identity-Based Interpretations

A distinct pattern emerging from the data concerns the role of perceived cultural authenticity as a critical evaluative lens. Consistent with SIT, complaints about taste, food presentation, and cultural representation reveal how consumers evaluate ethnic restaurant experiences through identity-laden expectations rather than purely functional criteria.

Specifically, reviews indicating dissatisfaction with the 'Chineseness' or 'Japaneseness' of the food reflect out-group perceptions triggered when the restaurant's cultural signals fail to align with the consumer's internalised cultural schema.

Representative customer statements illustrating this pattern include:

“good atmosphere, perfect service, worst chinese food at planet. Ambiance and service of restaurant is suitable for chill out, service is good. In contrast foods are not delicious and not worth for the money that you pay Normally far eastern food is light, but here i tried chinenese wall as starter, the chicken that they use at this meal was chosen from fattest part of chicken.”

“It’s not bad if you’re not looking for authenticity. One of the mixed East Asian restaurants in Ankara. In addition, it was very difficult to attract the waiters’ attention to order in the restaurant, which was empty at the time. We left the restaurant disappointed, having entered it happily.”

These statements illustrate that consumers deploy culturally embedded reference points—shaped by prior exposure, media, and social comparison—to evaluate ethnic restaurant experiences. When perceived cultural signals fail to meet these expectations, the resulting dissatisfaction extends beyond taste to encompass a sense of symbolic betrayal, consistent with the authenticity–adaptation paradox described in Section 2.4 (Wang, 1999; MacCannell, 1973; Morhart et al., 2015). In addition, these evaluations are disseminated through user-generated content on digital platforms, amplifying their reputational impact well beyond the individual encounter.

4.2. Temporal Shifts in Complaint Patterns

A temporal comparison between the pre-pandemic (2015–2019) and post-pandemic (2020–2025) periods revealed a statistically significant increase in hygiene-related complaints ($\chi^2 = 4.82$, $p = 0.028$), with the proportion of hygiene complaints rising from 0.70% to 2.56% of all reviews (see Table 4).

No other complaint theme showed a significant change over time (all $p > 0.05$). Importantly, following Bonferroni correction for multiple comparisons ($\alpha' = .05/8 = .00625$), the hygiene complaint increase ($p = .028$) does not exceed the corrected threshold and should therefore be interpreted as a descriptive trend requiring further investigation rather than a statistically robust difference.

Table 4. Pre- and Post-Pandemic Comparison of Hygiene-Related Complaints

Period	Total Reviews	Hygiene Complaints (n)	Hygiene Complaint Rate (%)
Pre-Pandemic (2015–2019)	430	3	0.70%
Post-Pandemic (2020–2025)	430	11	2.56%
Total	860	14	1.63%

However, complaint volume rose by 44.0% post-pandemic (50 → 72), which may reflect reduced service consistency or an increased propensity for digital complaints after 2020. These findings highlight that while hygiene has become a more salient evaluative criterion in the post-pandemic era, the core drivers of customer dissatisfaction have remained stable, underscoring the importance of continuous investment in service and food quality improvement.

Table 5. Temporal Comparison of Complaint Themes (Pre- vs. Post-Pandemic)

Complaint Theme	Pre-Pandemic (n=430)	Post-Pandemic (n=430)	Absolute Change	Relative Change (%)	χ^2	p
Service Quality	12	17	+5	+41.7%	1.02	0.312
Food Quality	10	14	+4	+40.0%	0.83	0.362
Price/Performance	5	6	+1	+20.0%	0.11	0.740
Hygiene	3	11	+8	+266.7%	4.82	0.028*
Waiting Time	6	7	+1	+16.7%	0.09	0.764
Staff Attitude	9	11	+2	+22.2%	0.26	0.610
Ambience	3	4	+1	+33.3%	0.14	0.708
Reservation Problem	2	2	0	0%	0.00	1.000
Total Complaints	50	72	+22	+44.0%	–	–

Note. Bonferroni correction applied ($\alpha' = .05/8 = .00625$). Following this correction, no complaint theme reaches the adjusted significance threshold, including hygiene complaints ($p = .028 > .00625$). *Significant at uncorrected $\alpha = .05$ only; not significant after Bonferroni correction. Cramér's V for the hygiene complaint increase = 0.075, indicating a small effect size.

A chi-square test of independence was performed to examine the relationship between time period (pre-pandemic vs. post-pandemic) and the presence of hygiene-related complaints. The relationship was significant at the uncorrected level, $\chi^2 (1, N = 860) = 4.82$, $p = .028$, Cramér's V = .075.

To further quantify the within-brand service inconsistency observed across Quick China branches, a coefficient of variation (CV) analysis was conducted on the total complaint frequencies (see Table 6). The four branches (Cayyolu, Bilkent, GOP, Umitkoy) exhibited a mean complaint count of 18.50 (SD = 7.94), yielding a CV of 0.43. In social science research, a CV exceeding 0.30 is generally interpreted as indicating high relative dispersion (Brown, 1998).

Table 6. Intra-Brand Variation Analysis of Complaint Frequencies Across Quick China Branches

Branch Name	Total Complaints (n)	Deviation from Mean	Squared Deviation
Quick China (Cayyolu)	12	-6.5	42.25
Quick China (Bilkent)	17	-1.5	2.25
Quick China (GOP)	30	11.5	132.25
Quick China (Umitkoy)	15	-3.5	12.25
Sum / Total	74		189.00

Mean=18.50 | SD=7.94 |

CV=0.43

The calculated value of 0.43 provides strong quantitative evidence that customer dissatisfaction levels are not uniform across the same brand's outlets. This finding empirically supports the earlier qualitative observation of 'inconsistent branch-level service delivery' and suggests that brand reputation alone does not guarantee operational consistency. From a digital reputation perspective, this intra-brand variation implies that negative evaluations from a single underperforming branch (e.g., Quick China GOP) can potentially spill over and harm the digital reputation of the entire brand.

4.3. Co-occurrence Analysis of Complaint Themes

To fulfill the analytical procedure described in the Method section, a co-occurrence analysis was performed to examine how different complaint themes are interrelated within the same customer review. Using the coded complaint instances from Table 3, a co-occurrence matrix was constructed to identify which themes are most frequently expressed together in a single review. This analysis is critical for understanding the multidimensional nature of customer dissatisfaction, as service failures rarely occur in isolation.

The results presented in Table 7 reveal that the most frequent co-occurring pair is Service Quality and Staff Attitude, appearing together in 12 out of 117 complaint-based reviews. The second most common co-occurrence is Service Quality and Food Quality (n=9), suggesting that when food fails to meet expectations, customers also tend to criticise the service delivery process. Similarly, Food Quality and Price/Performance (n=7) co-occur frequently, reflecting that perceived inauthenticity or poor taste intensifies negative value judgments.

These findings empirically support the theoretical claim that digital reputation is shaped by holistic customer experiences rather than isolated failures. The tight coupling between service quality, staff attitude, and food quality suggests that operational and interactional deficiencies are mutually reinforcing.

These findings indicate that customer complaints are not limited to functional service failures but also reflect broader experiential and interactional deficiencies. From a theoretical perspective, this suggests that service encounters are evaluated not only in terms of performance outcomes but also in relation to socially embedded expectations, which aligns with identity-based interpretations of consumption experiences.

Table 7. Co-occurrence Matrix of Complaint Themes (Frequency of Pairs)

Theme Pair	Co-occurrence Frequency (n)
Service Quality – Staff Attitude	12
Service Quality – Food Quality	9
Food Quality – Price/Performance	7
Service Quality – Waiting Time	5
Hygiene – Ambience	4
Food Quality – Staff Attitude	3
Waiting Time – Staff Attitude	2
Price/Performance – Staff Attitude	2
Hygiene – Food Quality	2
All other pairs	≤1

Notably, as the co-occurrence analysis (Table 7) demonstrates, food quality and staff attitude complaints frequently co-occur, suggesting that no single improvement initiative will be sufficient in isolation.

Another notable finding relates to the perceived lack of authenticity in food and dining experiences. Complaints regarding taste, presentation, and cultural representation suggest discrepancies between expected and experienced authenticity. This indicates that authenticity serves as a key evaluative dimension in ethnic restaurant contexts, where consumers rely on culturally embedded expectations to interpret service experiences.

In sum, the findings demonstrate that digital reputation in ethnic restaurant contexts is shaped through a combination of operational performance, interaction quality, and perceived authenticity.

Complaint-based evaluations function as critical indicators of reputational vulnerability, revealing not only specific service failures but also deeper mismatches between customer expectations and service delivery.

Taken together, the findings reveal three interrelated patterns that shape digital reputation in ethnic restaurant contexts. First, customer complaints are predominantly concentrated around core service dimensions—namely service quality, food quality, and staff attitude—indicating that operational performance remains the primary driver of negative evaluations. Second, the findings highlight the central role of perceived authenticity as a critical evaluative lens. Third, the results demonstrate that digital reputation is cumulatively constructed through repeated patterns of complaints rather than singular negative incidents.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions and Theoretical Implications

This study reveals how the digital reputations of Far Eastern restaurants operating in Ankara are constructed through online customer reviews and identifies the key complaint themes shaping these reputational dynamics. The findings demonstrate that hygiene standards, perceived food authenticity, service quality, staff attitude, and price–performance imbalance constitute the primary determinants of digital reputation. The intra-brand variation coefficient ($CV = 0.43$) confirms that brand reputation alone does not guarantee operational consistency across branches.

Although positive reviews dominate the dataset, the analysis confirms that negative reviews exert a disproportionate influence on consumer perception, consistent with the negativity bias in eWOM literature. Prior research demonstrates that negative information is more diagnostic, persuasive, and influential in shaping consumer evaluations than positive content (Chevalier & Mayzlin, 2006; Vermeulen & Seegers, 2009; Filieri & McLeay, 2014). In this respect, complaint-based evaluations function as critical indicators of reputational vulnerability and risk amplification in digital environments.

From a theoretical standpoint, the study contributes by integrating Social Identity Theory (SIT) (Tajfel & Turner, 1979) and the Cultural Adaptation Model (CAM) (Hofstede, 2001) into the analysis of digital reputation. The findings indicate that customer evaluations are not limited to functional service performance but are strongly shaped by identity-based expectations and symbolic meanings attached to ethnic cuisine. Complaints about taste, authenticity, and cultural representation reflect discrepancies between expected and experienced identity signals.

Interpreting the empirical patterns through the integrated SIT–CAM lens clarifies how identity congruence and perceived authenticity mediate complaint-driven reputational vulnerability. Specifically, complaints coded under food quality and staff attitude more frequently activated identity-congruence mechanisms, suggesting that perceived cultural mismatch amplifies negative evaluations beyond functional service failure. This pattern aligns with SIT's predictions about out-group signalling (Tajfel & Turner, 1979) and extends CAM by showing that adaptation strategies influence reputation indirectly through perceived authenticity. Importantly, these interpretations are grounded in the qualitative coding and supported by the co-occurrence analysis (Table 7) and intra-brand dispersion results (Table 6, $CV = 0.43$). Taken together, the evidence suggests that reputational risk in ethnic restaurant contexts is both operational and symbolic: managing service processes alone is insufficient if cultural signals are perceived as inauthentic.

Beyond this, the findings empirically support the authenticity–adaptation paradox, demonstrating that while local adaptation strategies are necessary for market alignment, deviations from perceived authenticity may negatively affect brand credibility and digital reputation (Kolar & Zabkar, 2010; Beverland, 2005; Cohen, 1988).

5.2. Managerial and Strategic Recommendations

Based on the findings, several strategic recommendations can be proposed. First, restaurants should implement systematic and data-driven complaint management systems. Second, maintaining a balance between cultural authenticity and local adaptation is essential. Third, staff training should be prioritized as a strategic investment (Karatepe, 2013; Babakus et al., 2003; Ladhari, 2009). Fourth, restaurants must invest in robust technological infrastructure to ensure the reliability of POS systems, mobile applications, and reservation platforms.

Fifth, because many complaints signal perceived inauthenticity (taste, presentation, cultural representation), social media strategies should foreground content that communicates cultural provenance and culinary authenticity. This may include behind-the-kitchen narratives, chef storytelling, and visual documentation of ingredient sourcing from regions of origin. Collaboration with culturally aligned micro-influencers who possess credibility within specific cultural communities (e.g., East Asian diaspora food bloggers) may also help mitigate inauthenticity perceptions, although this proposition requires independent empirical testing (Hudders et al., 2021). Given that co-occurring service quality and staff attitude complaints indicate systemic, interdependent deficiencies (Table 7), improvement efforts should adopt an integrated approach rather than targeting individual service dimensions in isolation.

Sixth, digital public relations strategies should integrate SEO-oriented content production, influencer engagement, and eWOM management. This integrated approach supports visibility, credibility, and sustained digital reputation (Chaffey, 2022).

5.3. Limitations and Future Research Directions

Despite its contributions, the study has several limitations. First, the analysis is limited to a single platform (Tripadvisor), which may restrict the generalizability of findings. Future studies should incorporate multi-platform data sources.

Second, by focusing exclusively on complaint-containing reviews, the study captures only the negative dimension of digital reputation formation. This represents a deliberate analytical choice oriented toward understanding reputational vulnerability; however, it precludes examination of how positive evaluations and overall rating patterns interact with complaint dynamics to shape collective reputation outcomes. Future research should adopt a comparative approach, integrating both positive and negative reviews to develop a more complete picture of digital reputation construction.

Third, although the study integrates qualitative and quantitative elements, future research could employ advanced analytical techniques, such as machine-learning-based sentiment analysis or network analysis, to further enhance methodological rigour.

Fourth, as the study is based on ten restaurants in a single Turkish urban context, findings should be interpreted with caution regarding cross-cultural generalisability. The Turkish cultural context, consumer familiarity with East Asian cuisines, and the specific socio-demographic profile of Ankara may shape complaint dynamics in ways that differ from contexts with established East Asian diaspora communities. Future studies

should examine ethnic restaurant reputation formation across multiple cultural settings to enable comparative insights.

In conclusion, this study demonstrates that digital reputation in ethnic restaurant contexts is a complex, multi-layered construct shaped by the interplay of service quality, cultural authenticity, technological infrastructure, and digital communication practices. For Far Eastern restaurants operating in culturally diverse urban environments such as Ankara, achieving a sustainable digital reputation requires a holistic approach that integrates cultural sensitivity, technological capability, and data-driven communication strategies.

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