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# Unveiling the nexus between duty-free shopping quality and tourism well-being: an examination of the mediating role of fun experience

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## ABSTRACT

Shopping in duty-free stores plays an increasingly important role in tourism, but few studies have focused on the impact of tourists' shopping experience and enjoyment on their satisfaction. This study aims to examine how shopping quality affects the well-being of tourists, with a specific focus on the role of fun experience (including hedonic engagement, sense of liberation, and sense of fun) as a mediator. This research fills a gap in the existing literature by carefully analysing how shopping quality and fun experiences enhance tourists' well-being. A cross-cultural sample was surveyed using quantitative methods to ensure the results were universally applicable. Based on 514 valid questionnaires, the study uses Structural Equation Modelling to analyse the data and draw several conclusions. First, the study finds that shopping quality positively impacts tourists' fun experience. Second, it confirms that fun experience is a significant source of well-being for tourists. Third, the study shows that fun experiences mediate between shopping quality and well-being. Finally, the research confirms that hedonic engagement and a sense of liberation are foundational to a sense of fun. These findings offer crucial insights for retail managers and marketers in developing strategies to enhance shopping experiences and improve consumer satisfaction and well-being.

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## KEYWORDS


Hainan duty-free stores; tourist; shopping quality; fun experience; well-being

## Introduction

Shopping enhances tourism by offering personalised souvenirs and immersing tourists in local cultures (Han & Hyun, 2018). It has become a unique attraction, enriching tourism's appeal (Lin & Chen, 2013). Duty-free shopping allows tourists to buy products at better prices and access more brands, boosting diversity and affordability, thus enhancing satisfaction and stimulating spending (Han & Hyun, 2018; Kim et al., 2019; Martín et al., 2019). Additionally, duty-free shops drive economic growth, increase employment, and promote tourism (Hwang et al., 2023). These shops attract international tourists by offering duty-free goods, boosting consumption and the destination's appeal (Han & Hyun, 2018). Hainan's duty-free shops, popular for diverse products and competitive prices, enhance shopping through brand partnerships, promotions, and cultural displays, positively impacting Hainan's tourism and retail sectors, which boosts the destination's cultural value and the attractiveness of duty-free shops, creating a mutually beneficial situation (Dong, 2021; Hu & Zhang,

2023). Therefore, studying tourists' shopping experiences in Hainan duty-free stores holds significant theoretical and practical value.

Extensive research has been conducted by scholars on the subject of duty-free shops, with a focus on customer shopping motivations (Choi & Park, 2017; Doong et al., 2012; Lee et al., 2017) and shopping experiences (Almakhayitah et al., 2024; Lee & Ku, 2011; Martín et al., 2019). For instance, Choi and Park (2017) combined the acceptance theory of technological innovation and the decomposition theory of planned behaviour to determine the significant impact of attitude, subjective norms, and perceived behavioural control on shopping intention. Hwang et al. (2023) took a customer experience approach and investigated the causes and consequences of Chinese tourists' memorable experiences in duty-free shopping. They discovered that Chinese tourists prioritise utilitarianism and hedonism in duty-free shopping, which leads to unforgettable shopping experiences and a positive impact on brand attitudes, preferences, and word-of-mouth. Despite the extensive

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research, customer well-being, specifically for tourists, has been largely ignored. This is concerning because tourists seek experiences that differ from their daily lives and have a greater economic value for the destination (Lumsdon, 2006).

Pursuing enjoyable experiences is widely recognised as a critical component of well-being, particularly for individuals who seek immediate pleasure and sensory gratification (Lucardie, 2014). Extensive research in psychology underscores the significance of positive experiences and personal enjoyment in enhancing life satisfaction and psychological well-being (Dierenfeld, 2024; Renee Baptiste, 2009; Scarpa et al., 2021). However, the specific connection between shopping and well-being has received limited research attention. While consumer behaviour studies often highlight the emotional benefits of shopping, such as stress relief and the excitement of acquiring new items, these aspects have not been comprehensively explored in the context of overall psychological well-being.

This study aims to address this gap by focusing on tourists and employing the Stimulus-Organism-Response (S-O-R) theory, with hedonic engagement, a sense of liberation, and a sense of fun as mediating variables. By examining the impact of tourists' perceptions of duty-free shopping quality on their sense of well-being, this research seeks to provide both theoretical and practical insights. The theoretical implications include a deeper understanding of how shopping experiences contribute to psychological well-being, while practical guidance can aid in creating more appealing tourism shopping environments. Such improvements have the potential to enhance the overall attractiveness of destinations and elevate consumers' shopping experiences, ultimately fostering a more positive and fulfilling tourist experience.

## Literature review

### Well-being

In the field of psychology, scholars have dedicated their efforts to investigating critical issues of human beings' pursuit of happiness and achieving a better life (Proctor et al., 2009). Well-being has long been recognised as the key to creating and sustaining healthy, productive societies (Das et al., 2020). While well-being remains a crucial research area in mental health, a unified stance on its conceptualisation is still lacking (Ryff & Keyes, 1995). As a result, divergent views and approaches prevail in defining and measuring well-being. The objective perspective entails measuring well-being through indicators such as economic status,

leisure time, environmental quality, and health status. This perspective posits that people's well-being is closely linked to the status and level of these objective factors (Uysal et al., 2016). In contrast, subjective well-being emphasises the individual's subjective experience and feelings. This understanding is based on an individual's subjective evaluation, considering their values, culture, life experiences, and how they positively evaluate their life (Tov, 2018). Subjective well-being, as a construct, typically consists of three dimensions: emotional response, domain satisfaction, and life satisfaction (Proctor et al., 2009). This study focuses on the impact of the shopping experience in Hainan duty-free shops on customers' well-being, emphasising the subjective dimension of feeling. Considering the research aims to explore how customers' personal experiences affect their well-being, the concept of subjective well-being is adopted to capture this complex inner experience.

The topic of well-being has received a great deal of attention in academic circles, with researchers using a variety of methods and theoretical frameworks to explore its essence, causes, and impacts on human behaviour and cognition (Akram et al., 2021; Tov, 2018; Uysal et al., 2016). For example, Gong et al. (2016) looked at how customer value co-creation affects well-being, while Henkens et al. (2021) examined the relationship between customers' perceptions and engagement with smart service systems and their well-being. The link between pleasure and well-being has also been studied (Janicke-Bowles et al., 2019; Myers et al., 2017). However, despite widespread discussion, few studies have discussed in depth the impact of customers' fun experiences on their mental health, particularly in the context of duty-free shopping. According to the study by Oh and Pham (2022), hedonic engagement and a sense of liberation are the key factors in fun experiences, providing a new perspective on their impact. Therefore, this study takes tourists as the target group and aims to investigate the relationship between tourists' pleasure experiences and well-being in duty-free shopping environments. The quality perception of shopping is the antecedent variable. By doing so, we hope to enhance our understanding of the relationship between consumer experience and psychological well-being and provide insights into how we can improve the duty-free shopping experience for tourists.

### S-O-R theory

The S-O-R theory is a psychological model that was first proposed by environmental psychologists Mehrabian and Russell (1974). This theory explains and predicts how external stimuli can affect an individual's

behavioural reaction through an internal processing mechanism (Aggarwal & Rahul, 2017; Ming et al., 2021; Zhang et al., 2022). The S-O-R theory considers an individual's behavioural response (Response) as the outcome of the interplay between the external environmental stimulus (Stimulus) and the individual's internal state (Organism) (Kang et al., 2021; Konuk, 2019). The term 'stimulus' refers to any factor in the external environment that can be perceived by the individual, such as light, sound, scent, and so on. The 'organism' indicates the individual's internal psychological and physiological processing mechanisms, including emotions, cognition, attitudes, etc. The 'response' is the resulting behaviour or emotional reaction, such as purchase behaviour, satisfaction, or changes in emotional states (Zheng et al., 2019).

The S-O-R theory provides a theoretical foundation for understanding how people interact with their surroundings, helping designers and planners optimise spatial design to enhance well-being and improve quality of life (Altinay et al., 2023). For example, considering the impact of environmental elements like lighting, colour, and vegetation in public space design can create more harmonious and comfortable settings (Pytharoulakis & Zouni, 2020). In short, the S-O-R theory presents a powerful analytical framework for understanding and designing the interactions between humans and their environment, effectively guiding practical applications, strategies, and decision-making.

Furthermore, the S-O-R theory has been widely applied across diverse fields, such as marketing, consumer behaviour, and environmental design (Peng & Kim, 2014). By understanding how individuals respond to specific stimuli, businesses can more effectively design products, services, and commercial environments to elicit desired consumer behaviours (Guo et al., 2021). For instance, in retail settings, merchants can influence customers' shopping experiences and actions by adjusting in-store elements like music, lighting, and layout (Pytharoulakis & Zouni, 2020). In online marketing, personalised advertising stimuli and content recommendations can spark consumer interest and purchase intentions (Wang et al., 2022). Additionally, the external environment can include a broader range of elements such as product quality, the ambience of the shopping plaza, service quality, brand image, and advertising messages (Aggarwal & Rahul, 2017; Mkedder et al., 2021; Song et al., 2022). These factors shape an individual's internal state or organism, such as emotions, cognitive evaluations, and attitudes, thereby guiding and shaping personal behavioural responses or changes in the state, like purchase decisions, brand loyalty, or customer satisfaction.

Consequently, this study aims to use the S-O-R theory to understand how the shopping quality perception in duty-free shops acts as an external stimulus, affecting tourists' inner mental states, including hedonic engagement, sense of liberation, and sense of fun, thereby exerting a positive influence on tourists' well-being.

## Hypotheses Development

### Shopping quality

Quality is a highly regarded area of research in modern consumer behaviour studies, where dimensions such as service quality and product quality are the focus points of discussion (Esfandiar et al., 2023; Tosun et al., 2007; Wibowo & Roostika, 2019). However, compared to these traditional quality dimensions, shopping quality is a more complex and comprehensive concept, focusing on consumers' experiences and satisfaction throughout the shopping process (Han et al., 2018). Various studies have shown that shopping quality goes beyond the singular aspects of products or services to include multiple factors like mall atmosphere, product quality, and service quality, among others (Lin & Chen, 2013). For example, In the context of shopping tourism, Albayrak et al. (2016) utilised three dimensions of shopping quality attributes, namely, *tangibles*, *staff*, and *product* to explain shopping traveller behaviour. Their research identified *tangibles* as encompassing physical environment factors such as neatness, cleanliness, lighting, ambience, and accessibility; *staff* as covering service quality (or encounter performances), including attitudes of sales staff, service efficiency, staff's product knowledge, and effective communication; and *product* as involving product quality, including reliability, performance, and availability. Yüksel (2009) categorised shopping quality into product quality, the ability of service personnel to solve problems, and the quality of shopping services. Han et al. (2018) defined quality as shoppers' perception/appraisal of the excellence of the product, performances of the product/physical environment/service, and the attributes of an airport duty-free shop. These factors collectively shape consumers' shopping experiences, thereby affecting their satisfaction and loyalty. Despite the diverse perspectives among scholars on the specific dimensions of shopping quality, there's a consensus that shopping quality can fundamentally be broken down into three core components: the service provided by store clerks, the quality of products, and the overall service of the mall (Han et al., 2018; Michon et al., 2005). Thus, in this study, shopping quality specifically refers to customers' perceptions of the quality of the

hall environment, products, and services when shopping in Hainan's duty-free stores.

Scholars have devoted considerable attention to quality as a significant area of research. Their efforts have resulted in discovering that the quality of products or services considerably impacts customer experience, like the sense of fun and liberation. The concepts of fun and liberation are pivotal in differentiating a product or service in a crowded market by offering more than just utilitarian value; they provide an emotional or experiential surplus that elevates the customer's overall perception of quality (Oh & Pham, 2022). Wikström (2008) argues that consumers seek experiences that satisfy their basic needs and provide pleasure, excitement, and a sense of freedom. Quality, in this context, is not just about the absence of defects or reliability but about creating an experience that resonates on an emotional level (Berry & Carbone, 2007). High-quality experiences are characterised by their ability to engage customers in a personal, enjoyable, and liberating manner, transforming routine transactions into memorable events (Kim, 2014).

In addition, scholars have revealed that quality significantly impacts customer engagement. Every experience that customers have with products and services could enhance their engagement, encouraging their intentions towards making a purchase, being loyal, and providing word-of-mouth recommendations (Prentice et al., 2019). For instance, Dhasan and Aryupong's (2019) research findings suggest that service quality significantly affects Customer Engagement (CE) in an offline context from a functional aspect. Similarly, study by Harimurti and Suryani (2019) indicates that service quality directly and substantially impacts customer engagement, which, in turn, influences satisfaction and loyalty.

Consistent with the discussion, the following hypotheses are offered:

H1: Shopping quality (depending on 1. mall atmosphere, 2. product quality, and 3. service quality) has a significant impact on hedonic engagement;

H2: Shopping quality (depending on 1. mall atmosphere, 2. product quality, and 3. service quality) has a significant impact on the sense of liberation;

H3: Shopping quality (depending on 1. mall atmosphere, 2. product quality, and 3. service quality) has a significant impact on the sense of fun.

### **Hedonic engagement**

Engagement is a complex concept that involves commitment, enthusiasm, passion, involvement, and dedication (Schaufeli, 2013). These qualities are important not only in personal relationships but also in business

contexts, particularly when it comes to building customer engagement. At its core, engagement aims to establish an emotional connection and loyalty to a brand, resulting in a deep and often passionate bond with the customer (Pansari & Kumar, 2017). This level of engagement is essential for businesses that want to thrive and succeed (Franzak et al., 2014). In other words, companies must pivot towards tailoring interactions, captivating their audience, and empathising with customers' specific needs to enhance their experiences and engage them as advocates for the brand (Pansari & Kumar, 2017). Additionally, hedonic engagement refers to the state where individuals are fully psychologically immersed in an activity for the pure enjoyment of the activity itself, without any external motives driving their involvement (Oh & Pham, 2022). Hedonic engagement focuses on customers' pleasure and enjoyment from interacting with a brand or product (Oh & Pham, 2022). Unlike utilitarian engagement, which is primarily driven by needs and obligations, hedonic engagement places a premium on the pursuit of excitement, enjoyment, and sensory delight. It stresses the importance of creating an emotional attachment to a brand or product that goes beyond mere satisfaction and enhances the customer experience with layers of pleasure and enjoyment (Ye et al., 2019).

As mentioned above, customer engagement, as a company's strategic goal, significantly impacts customer experience. Scholars have found that the level of customer participation can directly affect their perceived pleasure in products and services (Khan, 2023; Kim et al., 2013; Suh et al., 2022). For example, Oh and Pham (2022) proposed combining a state of hedonic engagement and a sense of liberation as a fun experience's fundamental psychological foundation. They suggested that during a state of hedonic participation, individuals may experience feelings of selflessness and lose track of time, which arise from their investment in and enjoyment of the activity. They pointed out that personal fun experiences mainly stem from the experience of the activity itself rather than relying on external achievements or rewards. In addition, scholars have also found that engagement and customer well-being are closely related (Boulton et al., 2019; Suh & Cheung, 2019; Weinberg & Joseph, 2017). For example, Asante et al. (2024) found that digital platforms can stimulate users' hedonic participation motivation by providing interesting, stimulating and pleasant experiences, thereby bringing higher hedonic benefits. Emotional engagement experiences often drive hedonic benefits, thereby improving customer well-being.

Consistent with the above discussion, the following hypotheses are offered:

H4: Hedonic Engagement has a significant impact on the sense of Fun;

H5: Hedonic Engagement has a significant impact on well-being;

Hmed1: Hedonic Engagement significantly mediates the impact of Duty-free Store Shopping Quality on Well-being.

### *Sense of liberation*

In the context of discussing exciting experiences, there is a recurring theme of liberation – a temporary state of freedom where individuals can release themselves from various internal constraints. These constraints can range from professional duties, family obligations, academic pressures, and financial stress to even self-imposed standards such as healthy eating habits, self-control over indulgences, and social norms in various settings (Oh & Pham, 2022). It has been believed since the 1970s that escaping one's hometown and the pressing realities of life is crucial for seeking a more authentic and joyful existence (Beverland & Farrelly, 2010; Cohen, 2010; Triantafyllidou & Siomkos, 2014). Hedonistic escapism is considered a luxury experience that offers individuals a unique opportunity to temporarily relieve themselves from the burdens of daily life and immerse themselves in an altogether different state of pleasure and relaxation. It is not just mere indulgence but rather essential healing for the soul, allowing customers to revel in peak delight and a profound sense of fulfilment before returning to their realities (Holmqvist et al., 2020). In addition, the sense of liberation is widely acknowledged as a cornerstone of well-being (Gaston-Breton et al., 2020; Markus & Schwartz, 2010; White & Murray, 2015). Gaston-Breton et al. (2020) suggest that the intricate link between experiences of freedom encompasses a dual capacity: it not only liberates individuals from constraints such as worries, stress, or the trivialities of everyday existence but also empowers them to engage in self-exploration, make autonomous choices, and actualise their aspirational selves. It is through these states of liberation that individuals can attain a profound sense of well-being.

Consistent with the discussion, the following hypotheses are offered:

H6: The sense of liberation has a significant impact on the sense of Fun;

H7: The sense of liberation has a significant impact on well-being;

Hmed2: The sense of Liberation significantly mediates the impact of Duty-free Store Shopping Quality on Well-being.

### *Sense of fun*

Fun is often associated with feelings of enjoyment, amusement, or lighthearted pleasure (Blythe & Hassenzahl, 2018). However, it's important to distinguish fun from well-being. The difference between these concepts lies in their level of psychological engagement and fulfilment. While activities like watching a Marvel movie may be fun, they may not contribute significantly to psychological investment or profound satisfaction. In contrast, well-being is linked to experiences that offer deeper psychological engagement and a sense of personal achievement (Oh & Pham, 2022). These activities may not be traditionally considered 'fun,' but they provide a deeper sense of fulfilment and happiness. Scholars suggest that fun is a factor that customers often experience in commercial activities, and it significantly impacts people's subjective well-being (Xie et al., 2022). For example, Armbrrecht and Andersson (2020) found that the perceived service quality and sense of fun among respondents in their study on sporting events affected their hedonic satisfaction, which in turn influenced their sense of well-being. Alatalo et al. (2018) developed a new conceptual framework. They discovered that by enhancing the elements of entertainment in the working environment of retail employees, the employees could have more fun at work, thereby achieving higher work well-being (Figure 1).

Consistent with the discussion, the following hypothesis is offered:

H8: The sense of fun has a significant impact on well-being;

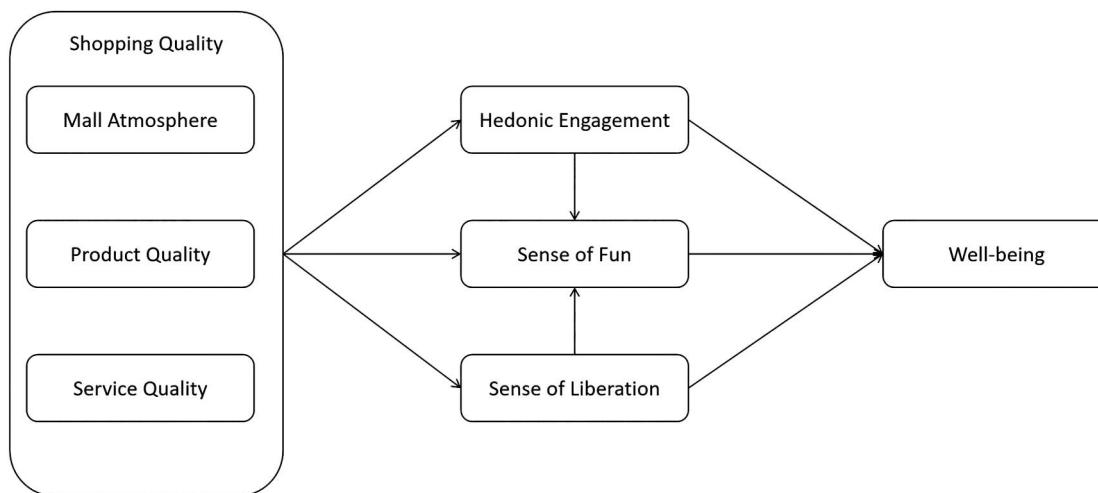
Hmed3: Sense of Fun significantly mediates the impact of Duty-free Store Shopping Quality on Well-being.

## **Research design**

### *Questionnaire design*

Based on previous research, we developed a questionnaire to collect data. All items were measured using a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The survey is divided into two parts. The first part consists of the measurement items for the constructs, which form the main body of the questionnaire. The shopping quality scale comprises 12 items adapted from existing studies (Han et al., 2018; Krey et al., 2022; Laroche et al., 2005). Hedonic engagement, sense of liberation, and sense of fun are each measured by 3 items sourced from Oh and Pham





**Figure 1.** Indicative relationships.

(2022). The well-being scale includes 4 measurement items adapted from Yang and Wong (2021). The second part collects basic personal information from respondents, such as gender, age, and educational level.

### Data collection

The present study leveraged questionnaire data obtained from on-site surveys conducted in five cities in Hainan Province, namely Haikou, Wanning, Qionghai, Lingshui, and Sanya, from 1 January 2022, to 20 January 2022. The research's primary objective across multiple locations was to ensure a more representative sample. To ensure the statistical validity of the data, the study meticulously adhered to a random sampling procedure throughout the data collection process. Before distributing the questionnaires, the research team conducted a preliminary screening of each potential participant to confirm their status as local residents. Only those who were confirmed as local residents were included in the final sample. Every fifth passerby was invited to participate in the study to ensure random sampling. Before participating in the survey, respondents were apprised about the anonymity and security of their personal information. Out of the 1300 questionnaires distributed, only 1266 valid questionnaires were obtained after screening, eliminating incomplete or insincerely filled questionnaires. The high effective recovery rate of 97.38% ensures the accuracy and reliability of the conclusions drawn from this research.

## Results

### Sample profiles

Table 1 provides an overview of the socio-demographic characteristics of a sample population. It shows a

predominance of female participants at 62.3% ( $n = 325$ ), with males at 36.2% ( $n = 189$ ) and a small percentage identifying as 'Other' ( $n = 8$ ). Most respondents fall into the 19–29 age bracket, accounting for 60% ( $n = 313$ ) of the population. When examining income levels, the most common bracket is under 3,000 RMB monthly, covering 35.2% ( $n = 184$ ) of the sample. Regarding education, a striking 72.8% ( $n = 380$ ) of the respondents have attained a Bachelor's degree, indicating a relatively high level of educational attainment within the group.

Table 2 shows the behavioural traits of respondents, with sightseeing ( $n = 228$ , 43.7%) being the most common travel purpose. Regarding the importance assigned to their activities, the largest group is neutral ( $n = 211$ , 40.4%), but a significant portion also finds them important ( $n = 177$ , 33.9%). Beauty and skincare

**Table 1.** Demographic characteristics of respondents.

Basics	Category	Frequency	Percentage (%)
Gender	Male	189	36.2
	Female	325	62.3
	Other	8	1.5
Age	16–18	38	7.3
	19–29	313	60
	30–39	81	15.5
	40–49	40	7.7
	50–59	29	5.6
	Above 59	21	4
	Monthly Income Level	Under 3000 RMB	184
3000–5000 RMB		82	15.7
5001–10000 RMB		124	23.8
10001–20000 RMB		87	16.7
20001–50000 RMB		19	3.6
Above 50000 RMB		26	5
Education	Primary school	4	0.8
	Middle school	7	1.3
	High school	21	4
	Associate college	35	6.7
	Bachelor	380	72.8
	Postgraduate	75	14.4

**Table 2.** Behavioural traits of respondents.

Basic situation	Category	Frequency	Percentage (%)
Main Purpose	Sightseeing	228	43.7
	Health and Relaxation	63	12.1
	Business Travel	30	5.7
	Duty-Free Shopping	49	9.4
	Visiting Relatives and Friends	36	6.9
Importance Level	Other	116	22.2
	Very Unimportant	23	4.4
	Unimportant	54	10.3
	Neutral	211	40.4
	Important	177	33.9
Products Purchased	Very Important	57	10.9
	Beauty and Skincare	392	75.1
	Shoes, Bags, and Apparel	163	31.2
	Watches and Jewelry	96	18.4
	Electronics	118	22.6
Shopping Expenses	Hainan Specialties	194	37.2
	Under 3000 RMB	188	36
	3000–5000 RMB	118	22.6
	5001–10000 RMB	119	22.8
	10001–20000 RMB	55	10.5
	20001–50000 RMB	27	5.2
	Above 50000 RMB	15	2.9
Travel Expenses	Under 3000 RMB	109	20.9
	3000–5000 RMB	94	18
	5001–10000 RMB	153	29.3
	10001–20000 RMB	85	16.3
	20001–50000 RMB	44	8.4
	Above 50000 RMB	37	7.1

1 US dollar = 7.13 RMB, 27 Aug 2024

products are the most purchased items ( $n = 392$ , 75.1%), while Hainan specialties and clothing accessories are also popular choices. Shopping expenditures are mostly under 10,000 RMB ( $n = 425$ , 81.4%), with the majority spending under 3,000 RMB ( $n = 188$ , 36.0%). Travel spending follows a similar pattern, with the most common range being 5,001–10,000 RMB ( $n = 153$ , 29.3%).

### Reliability and validity

Using Harman's single-factor test to evaluate the potential for common method variance (CMV) in our research, we conducted an exploratory factor analysis on all measured variables. The results of the unrotated factor solution indicated the presence of two distinct factors. The first factor explained 38.79% of the total variance, falling below the critical threshold of 40%.

Structural equation analysis is influenced by whether the data follows a normal distribution. Skewness values varied between  $-1.01$  and  $-0.51$ , all falling below the level of 3 in absolute terms. Likewise, kurtosis values for the variables were between  $-0.52$  and  $1.49$ , which are within the acceptable range, as they did not exceed 8 in absolute terms. Therefore, the study's data met the criteria for normal distribution, allowing for

**Table 3.** Results of confirmatory factor analysis.

Latent Variable	Observation Variable	Factor Loading	CR	AVE	Cronbach's $\alpha$
Duty-Free Shopping Quality					
F1: Mall Atmosphere	SQ1	0.91	0.96	0.86	0.95
	SQ2	0.94			
	SQ3	0.94			
	SQ4	0.92			
F2: Product Quality	SQ5	0.88	0.92	0.75	0.89
	SQ6	0.84			
	SQ7	0.85			
	SQ8	0.89			
F3: Service Quality	SQ9	0.91	0.95	0.84	0.94
	SQ10	0.94			
	SQ11	0.90			
	SQ12	0.92			
Hedonic Engagement	HE1	0.94	0.96	0.89	0.94
	HE2	0.95			
	HE3	0.94			
Sense of Liberation	SL1	0.95	0.97	0.92	0.96
	SL2	0.97			
	SL3	0.96			
Sense of Fun	SF1	0.95	0.97	0.92	0.96
	SF2	0.97			
	SF3	0.96			
Well-being	WB1	0.96	0.97	0.90	0.96
	WB2	0.95			
	WB3	0.94			
	WB4	0.94			

the application of covariance-based analytical approaches.

The reliability of the questionnaire was ascertained using SmartPLS. Both the Cronbach's alpha coefficient, ranging from 0.89–0.96, and the composite reliability (CR) values, between 0.92 and 0.97, exceeded the accepted threshold of 0.7, evidencing good internal consistency. Earlier steps involving exploratory factor analysis revealed that identified factors accounted for over 50% of the variance within their respective scales. The results of the confirmatory factor analysis (CFA) are shown in Table 3, with factor loadings greater than 0.7 for all question items, and with an SRMR of 0.052, an NFI of 0.910, and a chi-square value of 1,389.84, which meets the required criteria.

Discriminant validity ensures that different constructs reflect distinct traits. The Fornell-Larcker Criterion confirms this by comparing the square roots of the variables' AVEs with their inter-variable correlations. In Table 4,

**Table 4.** Results of discriminant validity text.

	CR	AVE	MA	PQ	SQ	HE	SL	SF	WB
MA	0.96	0.86	0.93						
PQ	0.92	0.75	0.82	0.86					
SQ	0.95	0.84	0.79	0.77	0.92				
HE	0.96	0.89	0.81	0.79	0.75	0.94			
SL	0.97	0.92	0.80	0.76	0.75	0.86	0.96		
SF	0.97	0.92	0.80	0.72	0.73	0.89	0.82	0.96	
WB	0.97	0.90	0.74	0.70	0.68	0.79	0.82	0.78	0.95

MA = Mall Atmosphere, PQ = Product Quality, SQ = Service Quality, HE = Hedonic Engagement, SL = Sense of Liberation, SF = Sense of Fun, WB = Well-being.

**Table 5.** Model path coefficient of SEM and hypothesis test results.

Hypothesis	Influence path	S.E.	STDEV	T Value	P Value	Result
H1.1	MA→HE	0.42	0.06	7.29	0.000	Supported
H1.2	MA→SF	0.16	0.06	2.83	0.005	Supported
H1.3	MA→SL	0.52	0.06	8.43	0.000	Supported
H2.1	PQ→HE	0.30	0.05	5.87	0.000	Supported
H2.2	PQ→SF	0.09	0.04	2.05	0.040	Supported
H2.3	PQ→SL	0.11	0.05	2.12	0.034	Supported
H3.1	SQ→HE	0.18	0.06	3.33	0.001	Supported
H3.2	SQ→SF	0.12	0.04	2.73	0.006	Supported
H3.3	SQ→SL	0.24	0.06	4.12	0.000	Supported
H4	HE→SF	0.44	0.06	6.86	0.000	Supported
H5	HE→WB	0.18	0.09	2.02	0.043	Supported
H6	SL→SF	0.14	0.06	2.44	0.015	Supported
H7	SL→WB	0.21	0.08	2.81	0.005	Supported
H8	SF→WB	0.50	0.07	7.59	0.000	Supported

MA = Mall Atmosphere, PQ = Product Quality, SQ = Service Quality, HE = Hedonic Engagement, SL = Sense of Liberation, SF = Sense of Fun, WB = Well-being.  
\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

diagonal elements are the AVE square roots, and off-diagonals are the correlations. It shows that the AVE square roots are greater than the correlations, indicating strong discriminant validity among the constructs.

### Hypotheses testing

This study used Smart PLS 4.0 to perform hypothesis testing on the data, and the results are shown in Table 5. Duty-Free Shopping Quality exerted a statistically significant positive influence on Hedonic Engagement, Sense of Liberation and Sense of Fun, lending support to both Hypotheses H1.1, H1.2, H1.3, H2.1, H2.2, H2.3, H3.1, H3.2 and H3.3. Additionally, Hedonic Engagement significantly contributed to Sense of Fun and Well-being, corroborating H4 and H5. Furthermore, an important positive relationship was observed between Sense of Liberation, Sense of Fun as well as Well-being, affirming H6 and H7. Besides, Sense of Fun had a significant positive impact on Well-being, supporting H8. These findings indicate strong support for the proposed model and the interconnections between these concepts in the context of the duty-free shopping experience.

We used Model 4 of the SPSS micro-PROCESS provided by Hayes (2012), which seeks to assess the

model's accuracy with moderation variables. The study's findings (refer to Table 6) reveal that Hedonic Engagement, Sense of Liberation, and Sense of Fun significantly partially mediate the relationship between Duty-Free Shopping Quality (encompassing Mall Atmosphere, Product Quality, and Service Quality) and Well-being, supporting Hmed1, Hmed2 and Hmed3.

## Conclusion and discussion

### Conclusion

This study targets tourists and aims to explore how their perception of shopping quality in Hainan Duty-Free stores affects their well-being and how their fun experience mediates the impact of shopping experience on well-being. After analysing the data, the following four conclusions were drawn.

First of all, research shows that shopping quality (Mall Atmosphere, Product Quality, and Service Quality) significantly impact fun experiences (Hedonic Engagement, Sense of Liberation, and Sense of Fun). This finding is consistent with existing literature. For example, previous studies have pointed out that a good shopping environment and high-quality services can significantly enhance tourists' shopping experience and participation (Berry &

**Table 6.** Results of mediating effects.

Influence path	Direct effect	95% confidence interval	Indirect effect	95% confidence interval	Total effect	95% confidence interval
MA→HE→WB	0.323	[0.222, 0.423]	0.492	[0.372, 0.611]	0.815	[0.749, 0.881]
MA→SL→WB	0.376	[0.278, 0.475]	0.439	[0.329, 0.549]	0.815	[0.749, 0.881]
MA→SF→WB	0.269	[0.177, 0.361]	0.546	[0.436, 0.661]	0.815	[0.749, 0.881]
PQ→HE→WB	0.240	[0.130, 0.349]	0.624	[0.497, 0.723]	0.864	[0.783, 0.945]
PQ→SL→WB	0.355	[0.258, 0.452]	0.509	[0.413, 0.612]	0.864	[0.783, 0.945]
PQ→SF→WB	0.219	[0.122, 0.316]	0.645	[0.532, 0.761]	0.864	[0.783, 0.945]
SQ→HE→WB	0.211	[0.122, 0.301]	0.533	[0.436, 0.633]	0.745	[0.671, 0.818]
SQ→SL→WB	0.256	[0.167, 0.345]	0.489	[0.400, 0.582]	0.745	[0.671, 0.818]
SQ→SF→WB	0.159	[0.074, 0.244]	0.585	[0.484, 0.689]	0.745	[0.671, 0.818]

MA = Mall Atmosphere, PQ = Product Quality, SQ = Service Quality, HE = Hedonic Engagement, SL = Sense of Liberation, SF = Sense of Fun, WB = Well-being.

Carbone, 2007; Dhasan & Aryupong, 2019; Prentice et al., 2019). This means that shopping can meet tourists' basic shopping needs and bring them entertainment experiences, such as fun, freedom and participation. This impact may be because a fashionable and comfortable shopping environment can stimulate tourists' sensory experience. At the same time, high-quality products and services meet tourists' expectations and needs. These factors work together to enhance tourists' overall shopping experience, affecting their Mood and well-being (Wikström, 2008).

Secondly, the results confirm that hedonic engagement, the sense of liberation, is the basis of the sense of fun. This aligns with previous psychological theory, which states that people experience more fun when they feel free and personally involved (Oh & Pham, 2022). This also highlights the importance of psychological feelings in the tourist experience. The improvement in the sense of liberation is usually accompanied by the individual's new understanding of the self and the removal of restrictions, allowing the individual to explore and enjoy current activities more freely (Beverland & Farrelly, 2010; Cohen, 2010; Triantafyllidou & Siomkos, 2014). The sense of participation involves the individual's active investment in the activity. At this time, the individual often experiences a deep immersion, which maximises the satisfaction and fun the activity brings (Pansari & Kumar, 2017; Schaufeli, 2013; Ye et al., 2019). Therefore, a sense of liberation and participation in shopping can often increase tourists' positive evaluation of their experience, thereby improving overall well-being.

Third, the study confirmed that fun experiences have a significant direct impact on tourists' well-being. This result is consistent with existing research. They pointed out that high-participation activities can increase individuals' positive emotions, thereby improving overall life satisfaction and well-being (Boulton et al., 2019; Suh & Cheung, 2019; Weinberg & Joseph, 2017). In addition, when tourists feel a sense of freedom when shopping in duty-free stores, they tend to have a higher sense of well-being (Gaston-Breton et al., 2020; Markus & Schwartz, 2010). Fun experience is the core of emotional experience elements, mainly affecting individuals' subjective well-being by enhancing positive emotions and reducing negative emotions (Xie et al., 2022). In this study, tourists enjoyed high-quality products and services. The pleasure experienced directly translates into a positive evaluation of the quality of life.

Finally, this study verified that fun experiences play a significant mediating role in the impact of tourists' perceived shopping quality on their well-being. This shows that fun experience is not only a direct source

of improving personal well-being, but also an important bridge between shopping quality and personal well-being (Alatalo et al., 2018; Xie et al., 2022). The analysis of mediating effects further reveals the psychological processes through which tourists experience pleasure and how these processes translate into personal well-being. The findings in this section provide important theoretical support for understanding the role of fun experiences in improving life satisfaction and provide insights and guidance for practical applications in promoting tourist well-being.

While previous scholars have examined the link between tourists' duty-free shopping and their overall satisfaction, this study adds a new dimension by incorporating the concept of hedonic engagement. By using the S-O-R theory as an analytical framework, this research delves deeper into the impact of perceived duty-free shopping quality on personal well-being through hedonic experiences. By exploring the mediating role of hedonic experience, this study not only contributes to the existing literature on tourists' well-being but also sheds light on how improving shopping experiences can enhance consumer well-being.

### *Practical implications*

Firstly, the result shows that the mall atmosphere is important for tourists' shopping experiences and well-being, so managers should strategically invest in creating an aesthetically and emotionally appealing mall atmosphere. Enhancements such as improved lighting, ambient music, and comfortable seating areas can significantly contribute to a more engaging shopping environment. By focusing on these sensory and emotional aspects, the shopping mall can effectively increase tourists' hedonic engagement, making their shopping experience more pleasurable. This, in turn, positively influences their overall well-being.

Secondly, maintaining high standards of product quality and customer service is essential for enhancing tourists' sense of fun during their shopping experience. Duty-free shops should implement rigorous staff training programmes focused on hospitality and product expertise, ensure a wide selection of high-quality goods, and uphold stringent quality control measures. By delivering superior products and services, these shops can directly influence the level of enjoyment tourists derive from their shopping activities, which is a critical factor contributing to their well-being, as supported by the research model.

Lastly, fostering a sense of liberation among tourists is vital for creating a stress-free and enjoyable shopping experience. Duty-free shops should consider offering

flexible return policies, ensuring easy navigation within the store, and streamlining the checkout process to minimise stress. Additionally, providing relaxation areas where tourists can pause and unwind during their shopping can further enhance their sense of freedom. These measures not only contribute to a more enjoyable shopping experience but also significantly impact tourists' overall well-being by promoting a sense of liberation, as highlighted in the study's findings.

### Research limitations and future work

One of the primary limitations of this study is its focus on Hainan's duty-free stores, which may limit the generalizability of the findings to other geographical locations and types of retail environments. Hainan's cultural and economic uniqueness could influence tourists' shopping experiences and perceptions in ways that might not be replicated elsewhere. Additionally, the study's reliance on self-reported measures of well-being and fun experiences could introduce bias, as respondents might not accurately recall or may socially desirably present their experiences and feelings.

Future research could address the limitations mentioned above by expanding the scope of inquiry to include diverse retail settings and geographical locations to determine the universality of the findings. Comparative studies involving duty-free shopping environments in different cultural and economic contexts could provide deeper insights into how varied factors influence shopping experiences and well-being. Furthermore, using longitudinal designs could help understand the enduring effects of shopping experiences on well-being over time.

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