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NONPARAMETRIC ANALYSIS OF CULTURAL CAPITAL TRANSFORMATION THROUGH THAI SOUVENIRS: EVIDENCE FROM POST-PANDEMIC TEMPLE TOURISM IN BANGKOK

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ABSTRACT

Thailand's cultural tourism sector has long been a crucial driver of economic growth, with souvenirs increasingly functioning as instruments of soft power. This study employs nonparametric statistical methods to analyze the transformation of cultural capital through the purchasing behavior of wearable Thai souvenirs in the post-pandemic temple tourism context of Bangkok. Utilizing Mann-Whitney U, Kruskal-Wallis, McNemar, Cochran's Q, and Cramer's V tests, the research rigorously examines the budget allocation and preferences of 132 international tourists across key cultural sites. The novel application of these nonparametric techniques addresses the non-normal distribution of tourism spending data, providing robust insights into demographic and psychological factors influencing souvenir consumption. The results indicate that factors such as age, nationality, previous visits, and purchase intentions, preferences for color and material, and willingness to recommend significantly influence tourists' expenditures on clothing souvenirs. This study advances cultural economics scholarship by integrating innovative methodological approaches and contributes practical implications for Thailand's soft power strategy under the "5F" framework - formulating culturally-informed marketing strategies, optimizing product design, and enhancing policy measures to revitalize cultural tourism post-COVID-19. These insights offer valuable guidance for tourism marketers, policymakers, and cultural entrepreneurs aiming to leverage wearable souvenirs as dynamic agents of cultural diplomacy and economic development.

KEYWORDS: Cultural Capital, Cultural Tourism, Nonparametric Analysis, Soft Power, Souvenirs.

1. INTRODUCTION

Thailand's tourism industry has long been a key driver of the nation's economic growth and development, contributing approximately 11.5% of GDP in 2019 (United Nations Thailand, 2020). The sector's significance extends beyond economic impact, playing a crucial role in employment - supporting over 4.4 million jobs directly and indirectly - as well as in cultural diplomacy through soft power initiatives. Prior to the COVID-19 pandemic, Thailand ranked among the world's most visited destinations, welcoming nearly 40 million international tourists in 2019 and generating 1.91 trillion baht in revenue (Thailand Tourism Report, 2024). Notably, three of Bangkok's most iconic temples - Wat Phra Kaew (Temple of the Emerald Buddha), Wat Pho (Temple of the Reclining Buddha), and Wat Arun (Temple of Dawn) - attracted over 8.5 million visitors annually, underscoring the enduring appeal of Thailand's cultural heritage.

Recognizing the strategic value of cultural assets, the Thai government has adopted a soft power framework known as the "5F" strategy, which highlights five core cultural pillars: Thai gastronomy (Food), Thai creative and cultural products (Fashion), Thai festivals and traditions (Festival), Thai healing and wellness (Fight), and Thai entertainment media (Film) (Creative Economy Agency, 2023). This framework aims to strengthen Thailand's global cultural presence and generate sustainable economic growth through cultural commerce.

This study focuses on one specific component of Thailand's cultural product offering: Thai souvenirs, which are defined here as Thai souvenirs - garments purchased by international tourists as wearable tokens of cultural experience. These items often incorporate traditional Thai fabrics, motifs, and craftsmanship, and are typically sold in cultural tourism contexts such as temple markets and heritage districts. As such, they occupy a dual role as both functional apparel and cultural souvenirs, contributing to the symbolic and economic dimensions of tourist consumption.

Despite the increasing prominence of clothing souvenirs in the tourism economy, relatively few studies have examined how tourists engage with these items through their purchasing behaviors. This gap is especially relevant in the post-pandemic context, as Thailand seeks to revitalize its cultural tourism sector through strategic soft power initiatives. By analyzing how international tourists allocate their budgets, and what demographic or aesthetic factors influence their decisions, this study contributes to a deeper understanding of how cultural capital is transformed into economic value through the medium of souvenirs.

This study employs nonparametric statistical methods to analyze the transformation of Thai cultural capital into soft power souvenirs, with a particular focus on post-pandemic international tourist behavior at three of Bangkok's most significant temples. Given the nature of cultural consumption data-often non-normally distributed-nonparametric approaches offer a flexible and robust analytical framework (Gibbons & Chakraborti, 2020). By examining evolving tourism patterns and consumer preferences, this research aims to identify key cultural factors driving the market success of Thai souvenirs. The findings will provide valuable insights for policymakers, industry stakeholders, and cultural entrepreneurs, contributing to Thailand's competitive advantage in the global cultural economy.

2. LITERATURE REVIEW

Souvenir purchases represent a significant portion of tourist spending, contributing to both local economies and the preservation of cultural identity. Among the diverse forms of souvenirs, clothing souvenirs - garments purchased by tourists as tangible cultural artifacts - play an increasingly prominent role. In this study, Thai souvenirs are defined as clothing that blends traditional Thai aesthetics, textiles, and craftsmanship. They function as both wearable apparel and cultural symbols of memory, identity, and the tourist experience.

Previous research has emphasized the multifaceted role of souvenirs in tourism. They act as tangible reminders of travel experiences, as well as expressions of personal taste and cultural appreciation. Yu and Littrell (2003) categorized tourist shopping behavior into product-oriented and process-oriented types, both of which influence how souvenirs, including souvenir items, are selected and valued. Kim and Littrell (2001) highlighted how tourists purchase souvenirs for themselves as markers of experience, rather than solely as gifts for others - an insight that aligns with the dual symbolic and personal significance of souvenir items purchased during travel. Recent work by Kong and Chang (2016) and Siregar et al. (2017) shows that souvenirs often reflect a tourist's self-expression and connection to local identity. Although souvenirs as a form of soft power are discussed in international literature, few studies address it in the context of wearable souvenirs. Lee et al. (2009) examined textile-based cultural products and concluded that color and material preferences are central to purchase

intention. The Theory of Planned Behavior has also been applied to understand tourist behavior related to culturally themed garments (Meitiana et al., 2019).

Clothing souvenirs often fulfill more than aesthetic needs; they convey cultural values and status. Swanson and Timothy (2012) emphasized that souvenirs simultaneously serve as consumer goods and cultural symbols, and this duality is particularly visible in souvenir items that integrate local designs, materials, or artisanal techniques. Similarly, Meitiana et al. (2019) found that purchase intentions for souvenirs are shaped by perceptions of authenticity and aesthetic value - both of which are frequently embedded in Thai souvenirs marketed to tourists. Furthermore, souvenirs appeal to tourists not only because of their visual and tactile qualities but also due to the narratives they carry - about heritage, tradition, or the place of purchase. Wang et al. (2024) emphasized the importance of both functional and symbolic value in souvenir purchases, a framework that is especially applicable to clothing items, which can be used, displayed, or gifted in meaningful ways.

This study builds on the intersection of souvenir theory and soft power, with an emphasis on segmentation. While previous studies have emphasized macro-economic contributions, we analyze how specific variables - such as age, nationality, and aesthetic preference - shape spending behavior on souvenirs.

3. METHODOLOGY

3.1. Data

This study employed a quantitative research design to investigate factors influencing foreign tourists' perceptions and purchase intentions regarding Thai souvenirs. Data were collected through a cross-sectional survey conducted at three prominent tourist destinations in Bangkok, Thailand (Wat Phra Kaew, Wat Arun, and Wat Pho) during December 2024, utilizing a convenience sampling approach to recruit 132 foreign tourists. The survey instrument consisted of two sections: demographic information (comprising nine questions on gender, age, nationality, education, occupation, monthly income, previous visits, purpose of visit, and travel group size) and Thai souvenir perceptions (twelve questions addressing budget, purchase intention, key purchase factors, preferred style, colors, patterns, and materials, intention to carry souvenirs back home, recommendation likelihood, purchase drivers, future purchase interest, and primary purchase reasons). Our selection of design, color and material options were justified by preliminary market research, which identified common trends in tourist-centric Thai souvenir clothing found in temple markets and boutique souvenir shops.

The data collection procedure was implemented by trained research assistants who administered questionnaires to eligible participants at the designated tourist sites. Participation was voluntary and anonymous, with all respondents informed about the study's purpose and providing informed consent before completing the survey. While the convenience sampling method has limitations regarding generalizability, it provided a practical means of gathering data within the study's scope and timeframe, offering valuable insights into international visitors' perspectives on Thai souvenirs while they engaged with significant cultural heritage sites in Bangkok.

This study employed a convenience sampling method to recruit 132 international tourists visiting three major cultural sites in Bangkok. While this approach facilitated timely data collection in a challenging post-pandemic context, it likely introduced bias regarding the representativeness of the sample relative to the overall tourist population. To quantify this potential bias, sample demographic characteristics were compared with official tourism statistics published by the Ministry of Tourism and Sports of Thailand and related governmental reports for the same period (Walderich, 2025). Notable discrepancies were identified, including an over-representation of European tourists in the sample (72%) compared to approximately 40% reported in official visitor arrivals data. Similarly, the sample skewed toward younger age groups, with 78% under the age of 44, whereas national tourism data indicate a broader age distribution among international visitors.

3.2. Mann-Whitney U test

The application of robust statistical methods is crucial in cultural economics, where data often defy the assumptions of traditional parametric tests. The Mann-Whitney U test, a non-parametric alternative, offers a powerful tool for comparing two independent groups when normality is not assumed. This test, also known as the Wilcoxon rank-sum test, evaluates whether the distributions of two populations are identical or if one tends to yield larger observations than the other. In cultural economics, where subjective valuations, artistic outputs, or audience preferences may be measured ordinally or exhibit skewed distributions, the Mann-Whitney U test allows researchers to draw meaningful inferences about comparative tendencies without relying on restrictive assumptions (Mann

and Whitney, 1947).

The Mann-Whitney U test operates by ranking all observations from both groups and calculating a U statistic, which quantifies the degree of separation between the distributions. Specifically, for two groups with sample sizes n□ and n□, the ranks are summed (R□ and R□), and the U statistic is derived as:

$$U_1 = \mathrm{n_1 n_2} + \frac{\mathrm{n_1(n_1+1)}}{2} - \mathrm{R_1} \text{ and } U_2 = \mathrm{n_1 n_2} + \frac{\mathrm{n_2(n_2+1)}}{2} - \mathrm{R_2},$$

with the smaller of U□ or U□ used for hypothesis testing. This approach is particularly relevant in cultural economics for analyzing comparative data, such as the impact of cultural policies on audience behavior, the valuation of cultural goods, or the comparative performance of artistic productions. By focusing on ranked data, the test offers a robust assessment of distributional differences, even in the presence of outliers or non-normal distributions, which are common in cultural data.

The Mann-Whitney U test ability to handle ordinal data and non-normal distributions renders it a valuable asset for empirical research in cultural economics. Its application extends beyond simple comparisons of means, allowing for the evaluation of stochastic dominance and distributional shifts. In contexts where cultural preferences, artistic outputs, or economic impacts of cultural activities are measured using scales that do not meet parametric assumptions, this test provides a methodologically sound alternative. By incorporating the Mann-Whitney U test into their analytical toolkit, cultural economists can enhance the rigor and validity of their research, leading to more nuanced and accurate insights into the economic dimensions of culture.

3.3. Kruskal-Wallis Test

In cultural economics, where data often involve subjective valuations, artistic performance metrics, or audience engagement indicators that deviate from normal distributions, robust non-parametric methods are essential. The Kruskal-Wallis test (Kruskal and Wallis, 1952), an extension of the Mann-Whitney U test, provides a powerful tool for comparing three or more independent groups. Unlike parametric tests such as ANOVA, it does not rely on assumptions of normality and equal variances, making it particularly suitable for ordinal data and skewed distributions. By ranking all observations across groups and calculating the H statistic, the test quantifies the degree of separation between the groups, allowing researchers to determine whether statistically significant differences exist in their medians.

The H statistic is computed using the formula:

$$H = \left(\frac{12}{\mathrm{N(N+1)}} \sum \frac{\mathrm{R_i^2}}{\mathrm{n_i}}\right) - 3(\mathrm{N}+1),$$

where N is the total number of observations, ni is the number of observations in each group, and Ri is the sum of ranks in each group. The resulting H statistic is then compared to a chi-square distribution with k-1 degrees of freedom to determine statistical significance. By focusing on ranked data rather than raw values, the Kruskal-Wallis test provides a robust method for assessing distributional differences, even in datasets that do not meet parametric assumptions.

The applicability of the Kruskal-Wallis test in cultural economics extends beyond simple mean comparisons. It allows researchers to evaluate stochastic dominance and distributional shifts, making it valuable for analyzing cultural participation patterns, artistic outputs, and the economic impacts of cultural activities. When the test identifies statistically significant differences, post-hoc pairwise comparisons, such as Mann-Whitney U tests, can pinpoint which specific groups differ. This approach enhances the precision and validity of research findings, leading to nuanced insights into cultural policies and market dynamics. By offering a methodologically sound alternative to parametric tests, the Kruskal-Wallis test supports robust conclusions about the economic dimensions of culture, benefiting both researchers and policymakers in the field (Gibbons and Chakraborti, 2020).

3.4. McNemar Test

McNemar test is a non-parametric statistical method used to analyze matched-pair nominal data, particularly in before-after study designs or when comparing two related dichotomous variables (e.g., success/failure, yes/no). Introduced by Quinn McNemar in 1947 (McNemar, 1947), the test evaluates whether the proportions of two dependent groups differ significantly, focusing on discordant pairs-cases where responses change between conditions. It is widely used in medical research (e.g., assessing diagnostic test performance), psychology (e.g., evaluating intervention effectiveness), and social sciences.

The test statistic is calculated as follows:

$$\chi^2 = \frac{(\mathrm{b-c})^2}{\mathrm{b+c}},$$

Where b represents the number of subjects who changed from negative to positive and c represents the number of subjects who changed from positive to negative. Under the null hypothesis of marginal homogeneity (i.e., the probability of positive and negative changes is equal), the test statistic follows a chi-square ($\chi 2$) distribution with 1 degree of freedom. If the total number of discordant pairs (b+c) is small (typically < 25), an exact binomial test is recommended for more accurate inference. A significant p-value indicates a meaningful difference between the two related groups. McNemar test is particularly valuable because it eliminates between-subject variability by using each subject as their own control, thereby increasing statistical power. This makes it a robust tool for analyzing paired categorical data across diverse scientific domains, ensuring reliable conclusions in research involving repeated measures or dependent samples (Agresti, 2013).

3.5. Cochran's Q Test

Cochran's Q test is a non-parametric statistical method used to determine whether there are significant differences among three or more related groups when the outcome variable is binary (e.g., success/failure, yes/no). Introduced by William G. Cochran in 1950 (Cochran, 1950), the test extends McNemar test, which is limited to two paired groups, to situations where multiple treatments or conditions are being compared within the same set of subjects. This test is widely used in experimental designs with repeated measures, such as clinical trials (comparing treatment effects), marketing studies (consumer preferences across multiple products), and educational research (test item consistency).

The test statistic Q is computed as follows:

$$Q = \frac{k(k-1)\sum_{j=1}^{k}(x_{.j} - \bar{x})^2}{\sum_{i=1}^{n} x_{i.}\,(k - x_{i.})}$$

where k is the number of treatments or conditions, n is the number of subjects, x_(.j) is the total number of successes for the j th treatment, x_(i.) is the total number of successes for the i th subject, and $\bar{x}$ is the grand mean (total successes divided by k).Under the null hypothesis that all treatments have the same probability of success, the Q statistic approximately follows a chi-square ($\chi 2$) distribution with k-1 degrees of freedom. A significant p-value suggests that at least one treatment differs from the others. Computational tools like R and SPSS simplify the calculation of Q and the corresponding p-value. Cochran's Q test is a valuable tool for analyzing categorical repeated measures, ensuring statistical rigor in practical research applications (McDonald, 2014).

3.6 Cramer's V

Cramer's V is a statistical measure used to determine the strength of association between two categorical variables in a contingency table. It is based on the chi-square ($\chi 2$) statistic and provides a standardized value ranging from 0 (no association) to 1 (perfect association). Unlike the chi-square test, which only indicates whether an association exists, Cramer's V quantifies the strength of that association, making it useful in fields such as cultural economics, marketing research, and social sciences where categorical data analysis is required (Agresti, 2013).

The formula for Cramer's V is:

$$V = \sqrt{\frac{\chi^2}{n \times (\min(k-1, r-1))}},$$

Where $\chi 2$ is the chi-square statistic, n is the total sample size, k is the number of columns, and r is the number of rows in the contingency table. The denominator ensures that Cramer's V accounts for table size, making it comparable across different studies. Typically, values below 0.3 indicate a weak association, between 0.3 and 0.6 suggest a moderate association, and above 0.6 signify a strong association. Researchers use Cramer's V in applications such as examining consumer preferences, cultural tourism trends, and behavioral patterns in economics. This section presents the findings of the study, focusing on the factors influencing the budget allocation of international tourists in Thailand. The descriptive statistics for age and budget are presented in Table 1. The sample consisted of 132 foreign tourists, with an average age of 34.51 years (SD = 13.209). The youngest participant was 19 years old, while the oldest was 74 years old. Regarding budget, data were available for 100 respondents, with an average budget of $799.40 (SD = 2,445.186) and a median of $175. The minimum reported budget was $20, while the maximum was $20,000. Notably, 32 participants had not set a specific budget for purchasing Thai souvenirs.

Table 1: Descriptive Statistics of Age and Budget.

Variables	Number	Mean	Median	Standard Deviation	Minimum	Maximum
Age (years old)	132	34.51	30	13.209	19	74
Budget (USD)	100	799.40	175	2,445.186	20	20,000

Table 2 categorizes respondents based on their allocated budget. Among those who specified a budget, 14.4% planned to spend less than $100, while 23.5% allocated between $100 and $199. Additionally, 17.4% budgeted between $200 and $499, and 20.5% intended to spend $500 or more. A considerable proportion of respondents (24.2%) had not predetermined a budget for Thai purchases. These findings indicate a high variability in spending intentions among international tourists, suggesting diverse purchasing behaviors and financial considerations.

Table 2: Number (percent) of Budget.

Less than 100 USD	100-199 USD	200-499 USD	500 USD and over	Not set
19 (14.4)	31 (23.5)	23 (17.4)	27 (20.5)	32 (24.2)

Table 3: Chi-Square Statistics between the Budget and Other Variables.

Variables	Budget		
	Chi-Square	df	*p*-value
Gender	4.988	4	0.289
Age	22.112	12	0.036*
Nationality	27.212	12	0.007*
Education	11.300	8	0.185
Occupation	40.684	24	0.018*
Monthly Income	37.770	16	0.002*
Number previous visits	24.911	12	0.015*
Purpose to visit	3.620	4	0.460
Travel group size	24.149	16	0.086
Purchase intention	22.075	4	< 0.001*
Key factors purchase	12.605	16	0.701
Preferred styles	16.921	8	0.031*
Preferred colors	13.118	12	0.361
Preferred patterns	12.738	16	0.692
Preferred materials	14.796	12	0.253
Carry back intention	4.039	8	0.854
Recommend to others	14.009	8	0.082
Purchase drivers	17.117	16	0.378
*p-value < 0.05			

This study examined the relationship between tourists' budget allocation for Thai souvenirs and various demographic and behavioral variables. Chi-square tests were employed to analyze these associations, with findings presented in Table 3. The analysis revealed that several factors significantly influence budget allocation for Thai souvenirs. Age ($\chi^2 = 22.112$, $p = 0.036$), nationality ($\chi^2 = 27.212$, $p = 0.007$), occupation ($\chi^2 = 40.684$, $p = 0.018$), and monthly income ($\chi^2 = 37.770$, $p = 0.002$) emerged as significant demographic determinants. Additionally, number of previous visits to Thailand ($\chi^2 = 24.911$, $p = 0.015$), purchase intention ($\chi^2 = 22.075$, $p < 0.001$), and preferred styles ($\chi^2 = 16.921$, $p = 0.031$) demonstrated significant associations with budget allocation.

In contrast, several variables showed no statistically significant relationship with budget allocation, including gender, education, purpose of visit, travel group size, key purchasing factors, preferred colors, patterns, and materials. Additionally, intention to carry Thai souvenirs back home, willingness to recommend to others, and purchase drivers were not significantly associated with spending behavior. These results highlight that while demographic factors like age, nationality, and income play a role in determining spending behavior, psychological and preference-related factors such as purchase intention and preferred styles also influence budgetary decisions.

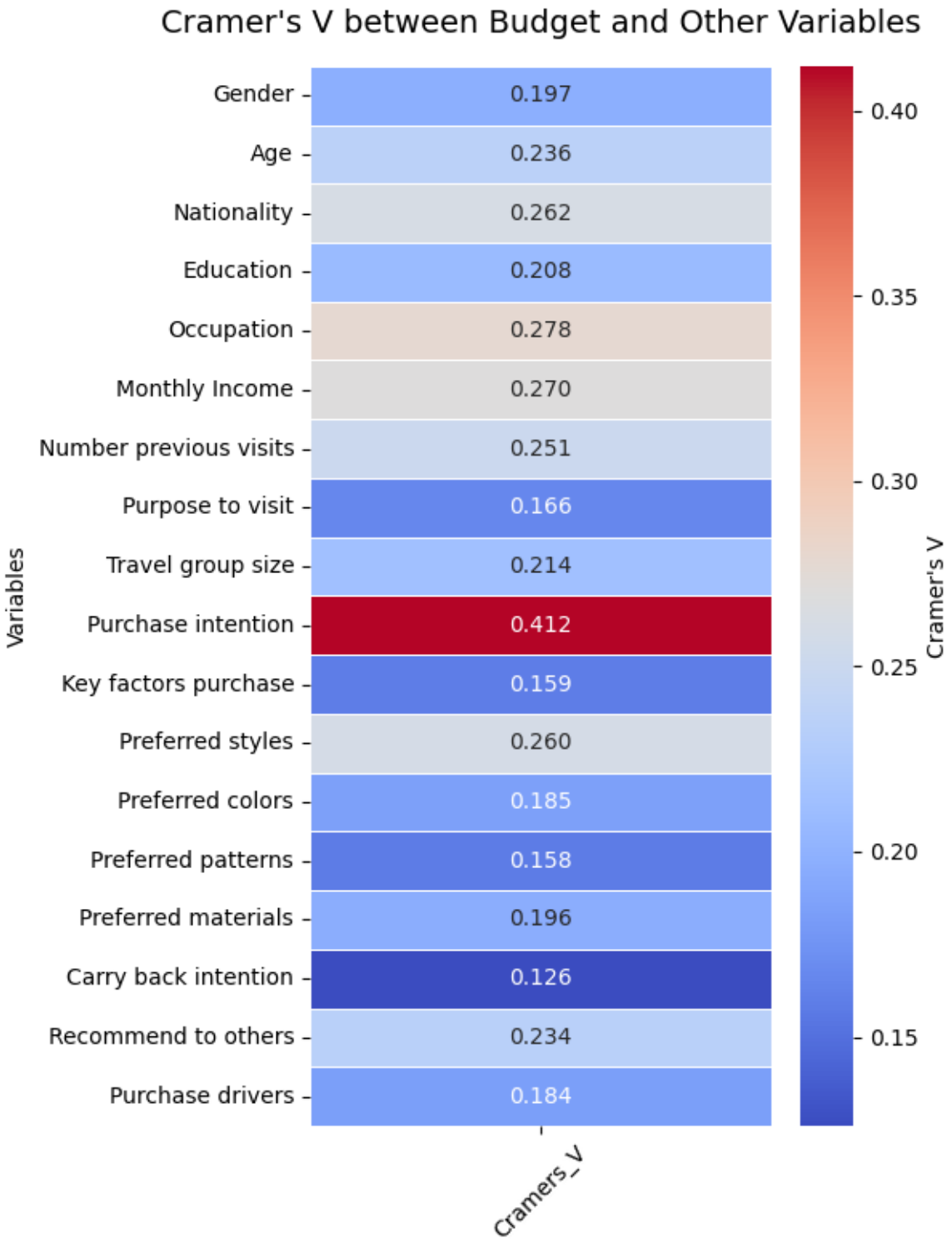

Figure 1: Cramer's V between Budget and Other Variables.

Figure 1 illustrates the strength of association between the budget and various categorical variables. Cramer's V is a measure of association between two nominal variables, with values ranging from 0 to 1, where higher values indicate a stronger relationship. The plot clearly shows that "Purchase intention" has the strongest correlation with budget, with a Cramer's V value of 0.412, indicating a substantial relationship between tourists' intention to purchase and their willingness to allocate higher budgets for Thai souvenirs. This suggests that psychological commitment to making a purchase

plays a crucial role in determining expenditure levels. Other variables such as "Occupation" (0.278), "Monthly Income" (0.270), "Nationality" (0.262), and "Number of previous visits" (0.251) demonstrate moderate associations with budget, while the remaining variables exhibit weaker relationships, generally below 0.25. This indicates that while some demographic and behavioral factors relate moderately to budget, purchase intention plays the most significant role.

Table 4: Number, Z-statistic and p-value of Mann-Whitney U test.

Variables		Number (%)	*Z*-statistic	*p*-value
Gender	Male	80 (62.5)	-0.665	0.506
	Female	48 (37.5)		
Purpose to visit	Holiday	117 (88.6)	-1.608	0.108
	Other	15 (11.4)		
Purchase intention	Yes	83 (62.9)	-3.001	0.003*
	No	47 (35.6)		
*p-value < 0.05				

Mann-Whitney *U* tests (Table 4) were conducted to examine differences in budget allocations across various demographic and behavioral variables among international tourists. The analysis revealed no significant difference in budget allocation between male and female tourists (Z = -0.665, p = 0.506), suggesting that gender does not significantly influence spending on Thai souvenirs. Similarly, no significant difference was found based on the purpose of visit (holiday vs. other; Z = -1.608, p = 0.108), indicating that tourists allocate comparable budgets regardless of their travel purpose.

However, a significant difference emerged concerning purchase intention. Tourists who expressed an intention to purchase Thai souvenirs allocated significantly different (and likely higher) budgets compared to those without such intentions (Z = -3.001, p = 0.003). This finding underscores the critical role of purchase intention as a key determinant of consumption behavior among international tourists in Thailand, highlighting the importance of pre-existing interest in influencing spending patterns.

Table 5: Number, Chi-Square Statistic and P-value of Kruskal-Wallis Test.

Variables		Number (%)	Chi-Square	df	*p*-value
Age	18-27 years old	50 (37.9)	9.140	3	0.027*
	28-43 years old	53 (40.2)			
	44-59 years old	18 (13.6)			
	60 years old and over	11 (8.3)			
Nationality	Europe	95 (72.0)	10.827	3	0.013*
	Asia	11 (8.3)			
	North America	13 (9.8)			
	Other	13 (9.8)			
Education	Below Bachelor Degrees	21 (15.9)	3.830	2	0.147
	Undergraduate Degree	21 (15.9)			
	Graduate	88 (66.7)			
Occupation	Management/ Administration	19 (14.4)	11.957	6	0.063
	Sales / Clerical	7 (5.3)			
	Professional/ Technical	32 (24.2)			
	Student	11 (8.3)			
	Self Employed	11 (8.3)			
	Unemployed	10 (7.6)			
	Other	42 (31.8)			
Monthly Income	Under 2,000 USD	45 (34.1)	8.646	4	0.071
	2,000 – 4,000 USD	39 (29.5)			
	4,001 – 6,000 USD	22 (16.7)			
	6,001 USD and over	18 (13.6)			
	No income	6 (4.5)			
Number previous visits	None	85 (64.4)	13.156	3	0.004*
	1 time	26 (19.7)			
	2-4 times	13 (9.8)			
	5 times or more	8 (6.1)			
Travel group size	Alone	30 (22.7)	7.560	4	0.109
	2-3 person	64 (48.5)			
	4-5 person	14 (10.5)			
	With a group of tour	9 (6.8)			
	Other	15 (11.4)			
Key factors purchase	Price	37 (28.0)	4.088	4	0.394

	Quality	34 (25.8)			
	Style	24 (18.2)			
	Pattern/Design	23 (17.4)			
	Color	6 (4.5)			
Preferred styles	Traditional	35 (26.5)	0.655	2	0.721
	Contemporary	29 (22.0)			
	Mix & Match	61 (46.2)			
Preferred colors	Bright colorful	48 (36.4)	8.553	3	0.036*
	Pastel	17 (12.9)			
	Black & White	34 (25.8)			
	Earth tone	29 (22.0)			
Preferred patterns	Traditional Thai patterns	45 (43.1)	1.928	4	0.749
	Floral or nature patterns	35 (26.5)			
	Geometric patterns	26 (19.7)			
	Animal patterns	17 (12.9)			
	Other	5 (3.8)			
Preferred materials	Natural fiber fabric	77 (58.3)	7.842	3	0.049*
	Local hand-woven fabric	38 (28.8)			
	Synthetic fiber fabric	9 (6.8)			
	Printed fabric	4 (3.0)			
Carry back intention	Yes	97 (73.5)	0.267	2	0.875
	No	9 (6.8)			
	Not sure	22 (16.7)			
Recommend to others	Yes	102 (77.3)	7.011	2	0.030*
	No	2 (1.5)			
	Not sure	24 (18.2)			
Purchase drivers	Personal use or consumption	82 (62.1)	6.749	2	0.034*
	Purchase as a souvenir	36 (27.3)			
	Other	14 (10.6)			
*p-value < 0.05					

The results of the Kruskal-Wallis tests (Table 5) highlight significant demographic and preference-based factors influencing budget allocations for Thai souvenirs among international tourists. Age was a key determinant (χ^2 = 9.140, df = 3, p = 0.027), with significant differences observed among four age groups: 18-27 years (37.9%), 28-43 years (40.2%), 44-59 years (13.6%), and 60 years and over (8.3%). These variations suggest that younger and older tourists allocate different budgets, likely due to differences in purchasing power and preferences. Nationality also played a significant role (χ^2 = 10.827, df = 3, p = 0.013), indicating that spending patterns vary across cultural backgrounds. Europeans represented the largest tourist group (72.0%), followed by North Americans (9.8%), Asians (8.3%), and tourists from other regions (9.8%). Additionally, previous visit experience showed a strong association with budget allocation (χ^2 = 13.156, df = 3, p = 0.004). First-time visitors (64.4%) tended to allocate lower budgets compared to repeat visitors, highlighting the influence of familiarity with Thai souvenirs on spending behavior.

In terms of product preferences, both color and material preferences significantly influenced budget allocation. Tourists favoring bright colors (36.4%) and black-and-white designs (25.8%) allocated higher budgets than those preferring earth tones (22.0%) and pastels (12.9%) (χ^2 = 8.553, df = 3, p = 0.036). Similarly, preference for material types was significant (χ^2 = 7.842, df = 3, p = 0.049), with natural fiber fabrics (58.3%) and local hand-woven fabrics (28.8%) being more strongly associated with higher budget allocations compared to synthetic (6.8%) and printed fabrics (3.0%). Behavioral intentions also showed varied effects. While the intention to carry Thai souvenirs back home was not significant, willingness to recommend them to others was (χ^2 = 7.011, df = 2, p = 0.030). A majority (77.3%) expressed willingness to recommend, suggesting a strong word-of-mouth effect on market expansion. Purchase drivers also influenced budget allocation (χ^2 = 6.749, df = 2, p = 0.034), with personal use (62.1%) being the primary motivation, followed by souvenir purchases (27.3%) and other reasons (10.6%).

Conversely, factors such as education level, occupation, monthly income, travel group size, key purchase factors, preferred styles, preferred patterns, and carry-back intention did not exhibit significant differences in budget allocation. These findings suggest that while demographic and preference-based factors are critical in shaping spending behavior, some socioeconomic variables may have a limited impact on budget decisions for Thai

souvenirs.

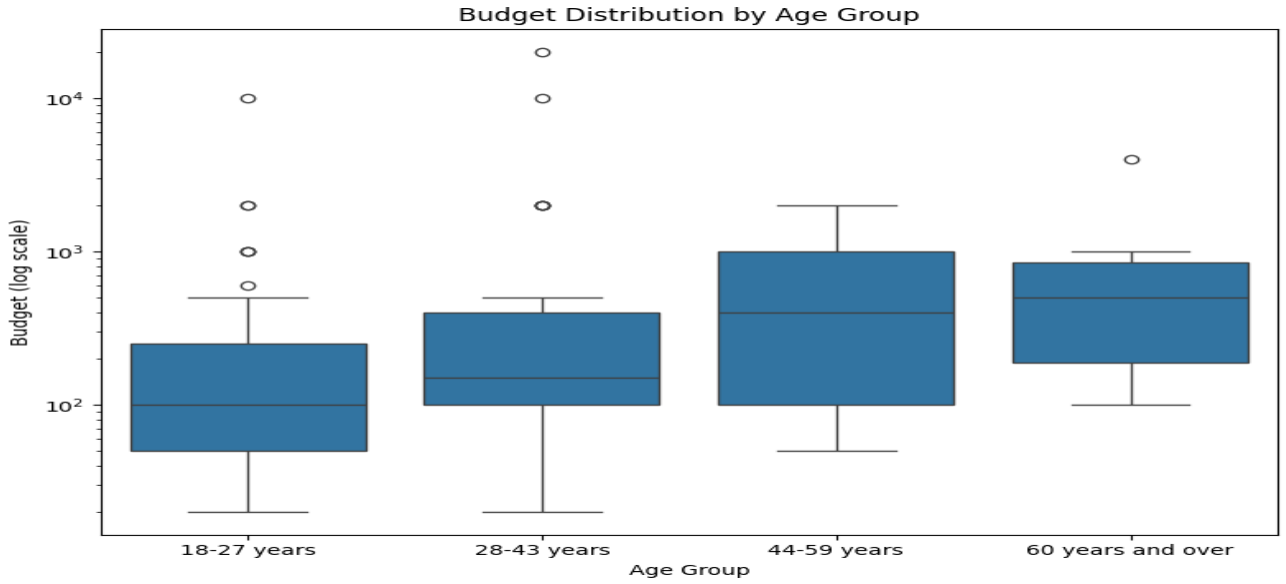

Figure 2: Budget Distribution by Age Group.

3. Results Presentation

Figure 2 displays the distribution of budgets allocated by international tourists for purchasing clothing souvenirs, categorized by age group. The y-axis uses a logarithmic scale to reduce the visual impact of outliers. Tourists aged 44–59 and those aged 60 years and over exhibit higher median budgets and greater variability in spending compared to younger groups (18–27 and 28–43 years). The youngest group (18–27 years) shows the lowest median and mean budgets, indicating more limited purchasing power. Overall, older age groups are associated with higher and more widely dispersed budgets compared to younger ones. These patterns align with the statistical findings that age is a significant determinant of budget allocation for cultural souvenirs.

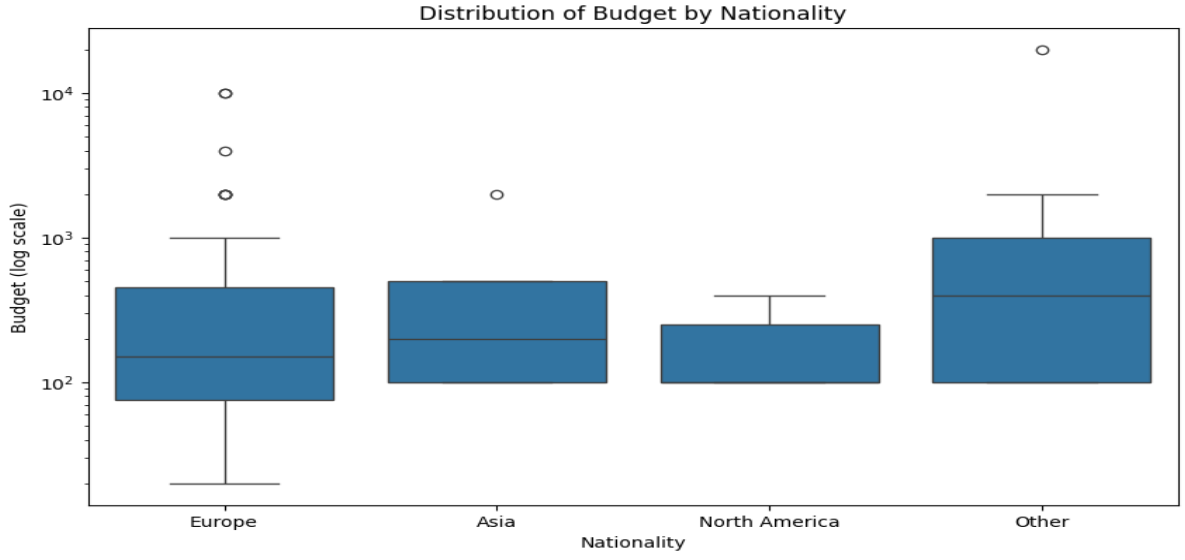

Figure 3: Distribution of Budget by Nationality.

Figure 3 presents the distribution of budgets for purchasing clothing souvenirs, categorized by tourists' nationality. A logarithmic scale is used on the y-axis to minimize the visual influence of extreme outliers. Tourists from the "Other" category (e.g., Middle East, Oceania) exhibit the highest median budgets and the widest variability, followed by Asian and European visitors. North American

tourists show the lowest median and narrowest budget range. These differences are consistent with statistical test results indicating nationality as a significant predictor of souvenir spending, with emerging markets representing high-value segments for targeted marketing strategies.

Table 6: Mean Rank, Z-statistic and p-value of Mann-Whitney U test for Age.

Age	Mean Rank	*Z*-statistic	*p*-value
18-27 years old	36.66	-1.476	0.140
28-43 years old	44.20		
18-27 years old	26.48	-2.135	0.033*
44-59 years old	37.54		
18-27 years old	24.47	-2.293	0.022*
60 years old and over	37.69		
28-43 years old	23.10	-1.161	0.246
44-59 years old	28.27		
28-43 years old	20.43	-1.750	0.089
60 years old and over	28.88		
44-59 years old	10.35	-0.621	0.535
60 years old and over	12.06		
*p-value < 0.05			

Table 7: Mean Rank, Z-statistic and p-value of Mann-Whitney U test for Nationality.

Nationality	Mean Rank	*Z*-statistic	*p*-value
Europe	39.97	-0.793	0.428
Asia	48.40		
Europe	41.69	-0.235	0.814
North America	39.50		
Europe	42.12	-2.120	0.034*
Other	58.23		
Asia	7.80	-1.180	0.238
North America	5.57		
Asia	8.30	-0.604	0.546
Other	9.96		
North America	7.29	-1.874	0.061
Other	12.23		
*p-value < 0.05			

Table 8: Mean Rank, Z-statistic and p-value of Mann-Whitney U test for Number previous visits.

Number previous visits	Mean Rank	*Z*-statistic	*p*-value
None	39.73	-1.203	0.229
1 time	46.98		
None	34.73	-2.556	0.011*
2-4 times	51.83		
None	32.42	-2.828	0.005*
5 times or more	56.00		
1 time	14.80	-1.343	0.179
2-4 times	19.33		
1 time	11.93	-1.951	0.051
5 times or more	18.75		
2-4 times	8.67	-0.956	0.339
5 times or more	11.17		
*p-value < 0.05			

Table 9: Mean Rank, Z-statistic and p-value of Mann-Whitney U test for Preferred Colors.

Preferred Colors	Mean Rank	*Z*-statistic	*p*-value
Bright colorful	27.17	-1.460	0.144
Pastel	20.21		
Bright colorful	31.18	-0.929	0.353
Black & White	35.56		
Bright colorful	34.49	-1.996	0.046*
Earth tone	25.24		
Pastel	14.95	-1.888	0.059
Black & White	22.26		
Pastel	18.67	-0.284	0.776
Earth tone	17.65		
Black & White	30.11	-2.462	0.014*
Earth tone	20.09		
*p-value < 0.05			

Table 10: Mean Rank, Z-statistic and p-value of Mann-Whitney U test for Preferred Materials.

Preferred Materials	Mean Rank	*Z*-statistic	*p*-value
Natural fiber fabric	41.76	-1.771	0.077
Local hand-woven fabric	52.05		
Natural fiber fabric	33.92	-1.250	0.211
Synthetic fiber fabric	43.25		
Natural fiber fabric	31.43	-2.100	0.036*
Printed fabric	54.33		
Local hand-woven fabric	18.39	-0.118	0.906
Synthetic fiber fabric	18.88		
Local hand-woven fabric	15.11	-1.723	0.085
Printed fabric	24.33		
Synthetic fiber fabric	5.19	-1.345	0.179
Printed fabric	8.17		
*p-value < 0.05			

Table 11: Mean Rank, Z-statistic and p-value of Mann-Whitney U test for Recommend to others.

Recommend to others	Mean Rank	*Z*-statistic	*p*-value
Yes	42.72	-0.678	0.498
No	54.50		
Yes	52.01	-2.084	0.037*
Not sure	35.60		
No	13.00	-1.201	0.230
Not sure	8.47		
*p-value < 0.05			

Table 12: Mean Rank, Z-statistic and P-value of Mann-Whitney U test for Purchase Drivers.

Purchase Drivers	Mean Rank	*Z*-statistic	*p*-value
Personal use or consumption	45.31	-0.907	0.364
Purchase as a souvenir	50.72		
Personal use or consumption	37.89	-2.369	0.018*
Other	18.71		
Personal use or consumption	20.50	-2.352	0.019*
Other	10.21		
*p-value < 0.05			

In Tables 6-12, the post-hoc analysis using Mann-Whitney *U* tests revealed significant differences in budget allocation patterns across various demographic and behavioral factors. Age emerged as a significant determinant, with older tourists (44-59 years and 60+ years) allocating considerably higher budgets compared to younger tourists aged 18-27 years (Z = -2.135, p = 0.033; Z = -2.293, p = 0.022, respectively). Nationality also played a role, as tourists from "Other" nationalities (e.g., Middle East, Oceania) demonstrated significantly higher budget allocations than European tourists (Z = -2.120, p = 0.034), despite their smaller sample sizes. Furthermore, previous visit experience strongly influenced spending patterns, with repeat visitors (2-4 visits and 5+ visits) allocating significantly more than first-time visitors (Z = -2.556, p = 0.011; Z = -2.828, p = 0.005, respectively), suggesting that familiarity and trust can lead to higher value purchases.

Preferences for color and material significantly impacted budget allocation. Tourists who favored bright colorful designs or black and white designs allocated notably higher budgets than those preferring earth tones (Z = -1.996, p = 0.046; Z = -2.462, p = 0.014, respectively). Similarly, those with a preference for printed fabrics demonstrated higher budget allocations compared to those who favored natural fiber fabrics (Z = -2.100, p = 0.036). Purchase intention and motivation also showed strong associations with spending behavior. Tourists who were willing to recommend Thai souvenirs allocated significantly higher budgets than uncertain tourists (Z = -2.084, p = 0.037). Additionally, tourists purchasing for personal use or as souvenirs allocated significantly higher budgets compared to those with "Other" motivations (Z = -2.369, p = 0.018; Z = -2.352, p = 0.019, respectively), indicating that clear purchase motivations correlate with increased spending on these items. While the analysis highlighted key predictors, it's important to note the limitation regarding the conflation of material type and decorative technique in the assessment of material preference.

Table 13: Number, Chi-square statistic and p-value of Cochran's Q Test.

Variables		Number (%)	Cochran's *Q*	df	*p*-value
Future Purchase Interest	Clothing	99 (38.1)	106.968	4	< 0.001*
	Jewelry	47 (18.1)			
	Accessories	55 (21.2)			
	Souvenirs	35 (13.5)			
Primary Purchase Reason	Uniqueness	75 (27.6)	156.000	6	< 0.001*
	Modern traditional	56 (20.6)			
	Colors patterns	53 (19.5)			
	Craftsmanship	25 (9.2)			
	Price reasonable	51 (18.9)			
	Packaging	2 (0.7)			
	Story tourism	10 (3.7)			
*p-value < 0.05					

Table 14: Chi-square Statistic (p-value) of McNemar Test for Future Purchase Interest.

Variables	Jewelry	Accessories	Souvenirs	Fragrances
Clothing	32.513 (< 0.001*)	27.191 (< 0.001*)	50.885 (< 0.001*)	62.943 (< 0.001*)
Jewelry		0.845 (0.358)	2.750 (0.097)	11.256 (0.001*)
Accessories			5.823 (0.016*)	16.364 (< 0.001*)
Souvenirs				2.222 (0.136)
*p-value < 0.05				

Table 15: Chi-square Statistic (P-value) of McNemar Test for Primary Purchase Reason.

Variables	Modern traditional	Colors patterns	Craftsmanship	Price reasonable	Packaging	Story tourism
Uniqueness	4.563 (0.033*)	6.485 (0.011*)	37.516 (< 0.001*)	8.015 (0.005*)	69.120 (< 0.001*)	56.110 (< 0.001*)
Modern traditional		0.062 (0.804)	16.364 (< 0.001*)	0.271 (0.603)	50.161 (< 0.001*)	32.661 (< 0.001*)
Colors patterns			12.150 (< 0.001*)	0.018 (0.894)	47.170 (< 0.001*)	33.283 (< 0.001*)
Craftsmanship				10.417 (0.001*)	17.962 (< 0.001*)	6.759 (0.009*)
Price reasonable					45.176 (< 0.001*)	31.373 (< 0.001*)
Packaging						-(0.039*)
- Binomial distribution used" is under Table 15 after "*p-value < 0.05"						

The results of Cochran's Q test (Table 13) indicate significant differences in future purchase interest across five categories of Thai cultural souvenirs: clothing, jewelry, accessories, souvenirs, and fragrances (Cochran's $Q = 106.968$, df = 4, $p < 0.001$). Clothing emerged as the most popular category, with 38.1% purchase interest, highlighting a strong tourist inclination towards wearable items embodying Thai cultural aesthetics. This encompasses a range from traditional Thai silk dresses to contemporary fashion featuring ethnic prints and traditional motifs. Accessories followed at 21.2%, including items like local fabric scarves and handcrafted bags, with jewelry at 18.1%, often comprising silver pieces with traditional Thai designs. In contrast, souvenirs (13.5%) and fragrances (9.2%) were the least preferred, suggesting tourists favor more practical and wearable cultural items. McNemar test results (Table 14) further emphasized clothing's dominant appeal by confirming significant pairwise differences between it and all other categories. Additional significant differences were also noted between jewelry and fragrances, and between accessories and both souvenirs and fragrances.

Similarly, significant differences were observed in the primary reasons for purchasing Thai souvenirs (Cochran's $Q = 156.000$, df = 6, $p < 0.001$). Uniqueness emerged as the most influential factor (27.6%), followed by modern traditional (20.6%) and colors/patterns (19.5%). Reasonable price (18.9%), craftsmanship (9.2%), tourism-related stories (3.7%), and packaging (0.7%) were less prominent considerations. McNemar test results (Table 15) revealed significant differences between uniqueness and all other factors, as well as between modern traditional, colors/patterns, craftsmanship, and packaging. These findings highlight tourists' strong preference for Thai clothing and their emphasis on uniqueness, modern traditional aesthetics, and color patterns when making purchase decisions. The results provide valuable insights for businesses seeking to enhance souvenir appeal and marketing strategies in the Thai cultural industry.

4. DISCUSSION

The findings of this study provide valuable insights into the complexities of international tourists' budget allocation in Thailand. The results highlight the interplay of demographic, behavioral, and preference-driven factors, shedding light on the motivations and determinants influencing expenditure patterns. These insights contribute to the broader discourse on cultural economics and tourism, emphasizing the role of cultural capital, trust accumulation, and market segmentation in shaping spending behavior.

4.1. Variability in Spending Intentions

The observed heterogeneity in spending patterns underscores the diverse motivations of international tourists. The wide budget range, from under $100 to over $20,000, with an average of $799.40 and a

median of $175, aligns with previous research indicating that tourist expenditures vary significantly due to individual financial capacity, cultural backgrounds, and travel objectives (Brida and Scuderi, 2013). The finding that 24.2% of tourists did not predetermine a budget suggests a strong presence of impulsive purchasing behavior, similar to Alegre and Pou (2016) findings.

4.2. Demographic Influences on Spending

This study confirms the significant role of demographic factors in shaping budget allocation for Thai souvenirs, corroborating previous findings from Wang and Davidson (2010) and Mehmetoglu (2007). Age, nationality, occupation, and monthly income all emerged as significant predictors of spending. Notably, the observed higher spending among older tourists challenges earlier assumptions about millennial dominance in Thai tourism expenditure (Supapakorn et al., 2023). This could reflect a post-pandemic shift, with high-net-worth retirees increasingly seeking cultural investments (Ścibiorska-Kowalczyk and Lacks, 2024). Furthermore, despite their smaller arrival numbers, tourists from "Other" nationalities (e.g., Middle Eastern, Oceanic) demonstrated higher spending compared to Europeans, supporting the Bank of Thailand's forecast of increased expenditure from non-traditional markets. These findings underscore clear demographic patterns in how tourists allocate their budgets for souvenirs.

While age emerged as a key segmenting variable, with tourists aged 18-43 forming the largest and most active group in spending, it's crucial to recognize that this broad age band spans multiple sub-cohorts with potentially distinct motivations and preferences. For instance, younger travelers (18-27) may be more price-sensitive and influenced by social media aesthetics, while older segments (28-43) might prioritize authenticity, craftsmanship, and material quality. This highlights the importance of implementing fine-grained segmentation strategies in cultural retail. Future research should further subdivide age groups and examine generational preferences across different nationalities, especially given the observed higher spending among tourists from non-traditional markets like the Middle East and Oceania.

4.3. Cultural Capital, Soft Power, and Aesthetic Preferences

This study highlights that souvenirs are more than commercial souvenirs - they function as symbolic carriers of cultural capital. Tourists' preferences for modern - traditional designs, handwoven textiles, and vibrant colors reflect a dual appreciation for cultural heritage and contemporary style. These preferences align with Thailand's "5F" soft power strategy by transforming intangible cultural elements into tangible consumer goods. The process is shaped by personal taste, identity expression, and cultural immersion. Tourists with stronger purchase intentions and greater familiarity with Thai culture - particularly repeat visitors - allocated higher budgets, suggesting that emotional connection and trust are essential in converting cultural capital into spending behavior.

Purchase intention emerged as the strongest predictor of budget allocation, supporting the theory of planned behavior (Gautam and Sharma, 2018) and previous studies on tourist shopping behavior (Yu and Littrell, 2003). Aesthetic preferences - especially for bright colors (p = 0.036) and natural fibers (p = 0.049) - significantly influenced spending, echoing findings on the psychological impact of color (Lee et al., 2009) and the cultural value embedded in material choices (Ścibiorska-Kowalczyk and Lacks, 2024). The preference for handwoven Thai textiles represents a deeper appreciation of authenticity and heritage. Furthermore, the appeal of modern-traditional (20.6%) and unique designs (27.6%) affirms Thailand's strong positioning in global tourism and supports previous research on uniqueness as a driver of tourist purchases (Littrell et al., 1993; Timothy, 2005).

The findings offer valuable insights for stakeholders in Thailand's souvenirs and tourism sectors. The 18-43 age group accounted for the majority of spending (78.1%), consistent with global patterns of younger tourists valuing cultural experiences. However, notable spending by older tourists (44+) challenges assumptions about millennial-led consumption, revealing a market opportunity among affluent retirees who see artisanal textiles as cultural investments. Additionally, tourists from emerging markets - particularly the Middle East and Oceania - showed higher per-trip expenditures compared to European tourists, despite the latter forming the largest group (72%). These patterns support forecasts from the Bank of Thailand and underscore the need for tailored marketing strategies that address the evolving demands of non-Western high-value tourist segments.

4.4. Marketing Implications and Digital Strategy

This study reveals significant potential for digital

marketing to enhance impulsive purchasing of Thai souvenirs. With 24.2% of tourists having no set budget, visually engaging content on platforms like Instagram, TikTok, and travel blogs can effectively influence spontaneous buying decisions. Highlighting elements such as unique designs, vibrant colors, and cultural craftsmanship through influencer collaborations and geo-targeted ads can increase product appeal. Quick-access features like QR codes linking to product stories or reviews can further build trust and intention to purchase. Tailored digital strategies should target younger tourists and high-spending visitors from non-traditional markets, who showed a stronger tendency to buy. By combining cultural value with digital storytelling, marketers can position Thai souvenirs as emotionally meaningful and trend-driven purchases.

5. CONCLUSIONS

This study demonstrates how demographic, behavioral, and aesthetic factors shape international tourists' spending on Thai clothing souvenirs in Bangkok's post-pandemic temple tourism context. Nonparametric analyses revealed that age, nationality, repeat visitation, purchase intention, and design preferences significantly influenced budgets, with clothing emerging as the most favored category. Older tourists and repeat visitors consistently allocated higher expenditures, while cultural aesthetics such as modern-traditional blends and vibrant colors were central to purchase decisions. These findings confirm the value of nonparametric methods for analyzing heterogeneous cultural consumption data and highlight the potential of wearable souvenirs as instruments of cultural soft power.

The study's practical implications are substantial. Price segmentation emerges as a key strategy, with affordable, stylish designs appealing to younger and price-sensitive visitors, while premium, handwoven, and high-quality items attract older and higher-income tourists, particularly retirees and repeat visitors. Nationality-based differences further suggest that marketing should be tailored to specific market segments. For example, visitors from emerging markets such as the Middle East and Oceania respond positively to exclusivity and authenticity, while European tourists are more receptive to modernized Thai motifs and contemporary styling. Beyond pricing and market segmentation, the results indicate the importance of product storytelling. Since the majority of purchases are intended for personal use, embedding cultural narratives - through digital tools such as QR codes or social media campaigns - can deepen tourists' emotional connection to souvenirs and increase willingness to pay. This strategic integration of cultural heritage into product design and promotion not only strengthens consumer engagement but also advances Thailand's "5F" soft power agenda, positioning wearable souvenirs as cultural ambassadors that diffuse Thai identity internationally.

This study is limited by its reliance on convenience sampling, which may have introduced demographic biases and reduced generalizability. Future research should employ probability-based sampling, expand to other cultural sites, and apply longitudinal or cross-destination designs to capture broader patterns. Refining survey instruments to separate fabric composition, production technique, and decorative style, along with more detailed age segmentation, would strengthen analytical precision. Finally, examining the role of digital marketing and social media in shaping purchase behavior could provide valuable insights for cultural tourism strategies.

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