

From Dunhuang Heritage to Digital Identity Performance: The Effects of Heritage-Themed Avatar Costume Skins on Cultural Identification and Behavioral Intentions in Global Game Markets

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Abstract As digital games increasingly function as spaces for cultural circulation and avatar-based self-presentation, heritage imagery is being transformed into virtual commodities such as costume skins. However, limited research has examined how culturally specific heritage elements are received by overseas players when presented in visually accessible and wearable digital forms. Addressing this gap, this study investigates whether Dunhuang-inspired avatar costume skins can promote cultural identification and behavioral intentions in global game markets. Using three Dunhuang-themed skins from Honor of Kings as visual stimuli, this study collected survey data from 328 overseas players and tested the proposed relationships through structural equation modeling. The analysis focuses on the links among Fashion-Oriented Visual Experience, Cultural Identification, Purchase Intention, and Communication Intention. The results show that Fashion-Oriented Visual Experience significantly enhances Cultural Identification, which in turn positively influences both Purchase Intention and Communication Intention. These findings suggest that overseas players respond to Dunhuang-inspired skins largely through visually appealing and accessible digital presentation rather than through deep prior knowledge of the heritage itself. By linking heritage-themed skin design to cultural identification and market-related behavioral intentions, this study contributes to research on game skins, digital cultural content, and cross-cultural reception in contemporary game markets.

Keywords Dunhuang heritage, Heritage-themed game skins, Avatar costume skins, Fashion-oriented visual experience, Cultural identification, Behavioral intentions

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Introduction

As digital entertainment platforms continue to expand globally, video games have evolved beyond leisure products into important spaces for cultural circulation, identity formation, and soft power transmission (Cranmer et al., 2021; Cull, 2009; Nye, 2004). In particular, digital games increasingly intersect with fashion, lifestyle, and cultural consumption, making them influential environments in which cultural

symbols are represented, displayed, and commercialized across borders (Clement, 2024; Muriel & Crawford, 2018).

Within this context, game skins have become important digitally consumable appearance products. Unlike purely functional game items, skins often operate as visible resources for self-presentation, aesthetic distinction, and

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symbolic communication in player communities. Prior studies on virtual goods suggest that in-game items derive value not only from utility, but also from their roles in identity construction, aesthetic preference, and social signaling (Hamari, 2015; Hamari & Keronen, 2017; Kuo et al., 2016; Lehdonvirta, 2009; Wanick et al., 2018). When skins take the form of avatar costume skins or apparel-based character appearances, they also acquire fashion-related qualities, allowing players to engage with digital appearance in ways comparable to broader forms of style consumption.

At the same time, collaborations between game companies and cultural institutions have expanded rapidly, and digital games increasingly incorporate traditional culture and heritage-derived imagery into character design and virtual commodities, including culturally themed skins (Kapur, 2024). This development raises an important question for cross-cultural communication research: how can culturally specific heritage symbols be translated into global digital environments in ways that remain appealing to audiences who may lack detailed prior cultural knowledge? Although previous studies have examined gaming experience, player motivation, user behavior, and online communities (Britt & Britt, 2021; Brockmyer et al., 2009; Caplan et al., 2009; Hsu & Lu, 2004, 2007; Hsu et al., 2009; Okazaki, 2008; Vella et al., 2019), relatively limited attention has been paid to how heritage-based visual elements function when transformed into avatar costume skins for global circulation.

This issue can be considered in relation to cultural discount, which refers to the reduced appeal or transferability of cultural products outside their original cultural contexts because audiences may not share the relevant language, values, or symbolic frameworks embedded in them (Hoskins & Mirus, 1988). Relatedly, cultural proximity theory suggests that audiences tend to prefer media content aligned with familiar cultural codes and aesthetic conventions (Straubhaar, 1991). While these perspectives have been widely applied to film and television, their relevance to interactive digital games remains underexplored. In avatar-based game environments, cultural content is not only interpreted but also worn, displayed, and socially circulated. This suggests that heritage imagery may be received not only through historical understanding, but also through visual accessibility, identity

performance, and repeated exposure in socially visible digital settings.

This possibility is especially relevant in the case of Dunhuang heritage. Dunhuang-derived imagery is culturally significant but may also be difficult for overseas players to fully interpret in historical or religious terms. However, when such imagery is translated into avatar costume skins, players may still respond positively to its visual style and develop a sense of cultural affinity through aesthetically appealing and wearable digital forms. Existing research has not sufficiently explained how visual elements derived from Dunhuang heritage, when adapted into avatar costume skins, may support cultural identification or influence downstream behavioral responses in global game markets.

To address this gap, this study focuses on the digitalization of Dunhuang-derived heritage aesthetics in game skins. In this study, digitalization refers to the process by which visual elements derived from Dunhuang heritage are adapted into digitally consumable appearance designs suitable for avatar-based display in game environments. Rather than assuming that deep symbolic transmission is a prerequisite for engagement, this study examines whether visually stylized and fashion-oriented digital presentation can serve as a more immediate basis for cross-cultural response. Accordingly, cultural discount is treated not as a directly measured variable, but as the theoretical background of the study.

Based on this perspective, the present study proposes a quantitative model centered on four constructs: Fashion-Oriented Visual Experience, Cultural Identification, Purchase Intention, and Communication Intention. Specifically, the study examines whether overseas players' fashion-oriented visual evaluations of Dunhuang-inspired skins are positively associated with Cultural Identification, and whether Cultural Identification further leads to stronger Purchase Intention and Communication Intention.

Empirically, the study uses three Dunhuang-inspired skins from *Honor of Kings* as research stimuli. These skins were selected because they are avatar costume skins incorporating recognizable Dunhuang-inspired visual elements such as mural-based color schemes, decorative motifs, and costume-like design features. Methodologically, the study

adopts a quantitative design based on survey data collected from 328 overseas players, with structural equation modeling used to test the relationships among the focal constructs.

By centering the analysis on the path from Fashion-Oriented Visual Experience to Cultural Identification, and from Cultural Identification to Purchase Intention and Communication Intention, this study refines the discussion of heritage digitalization in game skins and provides a more focused account of how Dunhuang-inspired avatar costume skins may be associated with cross-cultural responses in digital game markets.

Literature Review and Hypotheses Development

Avatar costume skins as fashion-related digital appearance

Game skins are virtual goods that modify the visual appearance of in-game objects, interfaces, or characters without necessarily changing core gameplay functions. This study focuses specifically on avatar costume skins, that is, apparel-based character skins that directly alter a character's clothing, accessories, silhouette, and overall wearable visual style. Unlike background skins, interface skins, or effect-only skins, avatar costume skins are displayed through playable characters and function as visible resources for self-presentation, aesthetic distinction, and symbolic communication in digital game environments (Hamari, 2015; Hamari & Keronen, 2017; Lehdonvirta, 2009; Yee & Bailenson, 2007).

Because these skins are worn and socially displayed through avatars, they can be understood as a form of fashion-related digital appearance rather than merely decorative game assets. Prior research on virtual goods has shown that cosmetic digital items derive value not only from visual enhancement but also from identity expression, symbolic display, and social recognition within player communities (Alomar et al., 2016; Kuo et al., 2016; Wanick et al., 2018). In this sense, Dunhuang-inspired avatar costume skins provide a suitable context for examining how heritage aesthetics may be adapted into visually accessible, wearable,

and socially visible digital forms in cross-cultural game environments.

Dunhuang heritage, digitalization, and cultural discount in game environments

Dunhuang heritage is both culturally significant and visually distinctive. The murals of the Mogao Caves are well known for their flowing drapery, ornamental motifs, celestial imagery, rhythmic line treatment, and vivid color schemes. These characteristics make Dunhuang heritage especially suitable for digital reinterpretation because many of its visual features remain recognizable even when audiences do not possess detailed knowledge of the original historical or religious context.

In this study, digitalization refers to the process through which visual elements derived from Dunhuang heritage are adapted into digitally consumable appearance designs suitable for avatar-based display in game environments. Through this process, mural-inspired colors, flying apsara imagery, decorative ribbon forms, and costume-like structures can be transformed into avatar costume skins that remain culturally suggestive while becoming more visually legible to global players.

This issue can be considered in relation to cultural discount, which refers to the reduced transferability of cultural products outside their original cultural contexts because audiences may not share the symbolic codes, values, or interpretive frameworks embedded in them (Hoskins & Mirus, 1988). While this perspective has been widely used in film and television studies, interactive digital games differ in that cultural content is not only interpreted but also worn, displayed, and socially circulated through avatars. Accordingly, this study treats cultural discount not as a directly measured construct but as a theoretical background for examining whether Dunhuang-derived visual content may be received more positively when presented in visually stylized and wearable digital forms. At the conceptual level, it is important to distinguish the background concepts of digitalization and cultural discount from the focal psychological constructs examined in the present model. Digitalization refers to the design process through which Dunhuang-derived visual elements are transformed into avatar-based digital appearance.

Cultural discount, in turn, is used only as a theoretical lens for interpreting cross-cultural reception under conditions of cultural distance. Neither concept is treated as an individual-level latent variable in the SEM model. Instead, the empirical model focuses on players' evaluative response to skin design (Fashion-Oriented Visual Experience), their affective and symbolic affinity with the cultural imagery represented in the skins (Cultural Identification), and their subsequent behavioral intentions.

Fashion-Oriented Visual Experience and Cultural Identification

In this study, Fashion-Oriented Visual Experience refers to players' evaluative response to the aesthetic appeal, stylization, modernity, and fashion-related attractiveness of Dunhuang-inspired avatar costume skins. The focus is therefore not on gameplay experience in general, but on the visual and style-based reception of Dunhuang-derived skin design.

Prior studies suggest that visual appeal plays an important role in shaping attitudes and behavioral responses in digital consumption environments. In virtual goods, interface design, and online visual experience research, aesthetic attractiveness has been shown to influence user evaluation, preference formation, and behavioral response (Moshagen & Thielsch, 2010; Hamari, 2015; Wanick et al., 2018). When culturally specific imagery is embedded in a visually attractive and stylistically refined digital form, users may become more willing to approach the content positively even if they lack detailed prior knowledge of its original cultural background.

In the present study, Cultural Identification is defined as an affective sense of connection, affinity, or symbolic closeness to the cultural imagery represented in Dunhuang-inspired skins. It refers not to deep historical understanding or stable identity transformation, but to the extent to which players feel emotionally and symbolically drawn to the Chinese cultural imagery conveyed through the skins.

Fashion-Oriented Visual Experience and Cultural Identification should therefore be analytically distinguished. The former concerns evaluative response to visual attractiveness and fashionability, whereas the latter concerns affective and symbolic closeness to the cultural imagery

represented through that design. Based on this reasoning, visually attractive Dunhuang-inspired skins are expected to encourage stronger Cultural Identification among overseas players.

- H1.** Fashion-Oriented Visual Experience positively influences Cultural Identification.

Cultural Identification and Behavioral Intentions

Cultural Identification is important because it links players' visual evaluation of Dunhuang-inspired skin design to downstream responses without presupposing deep cultural understanding. In digital games, cultural symbols are not only viewed but also embodied and displayed through avatars in socially visible environments (Jennett et al., 2008; Yee & Bailenson, 2007). When players experience an affective sense of connection or symbolic affinity with the cultural imagery represented in a skin, they may become more willing to value, acquire, and communicate it to others.

In this study, behavioral intentions are divided into Purchase Intention and Communication Intention. Purchase Intention refers to the willingness to purchase a Dunhuang-inspired avatar costume skin as a virtual appearance product (Hamari, 2015; Lehdonvirta, 2009). Communication Intention refers to the willingness to share, recommend, discuss, or circulate the skin and its related cultural imagery within social or platform-based settings (Cheung & Thadani, 2012; Kim & Hyun, 2012). Distinguishing these two outcomes allows the study to capture both market-oriented and circulation-oriented responses to heritage-themed skins.

Because Cultural Identification in this study refers to an affective and symbolic sense of cultural closeness, it is expected to increase both forms of behavioral intention.

- H2.** Cultural Identification positively influences Purchase Intention.
- H3.** Cultural Identification positively influences Communication Intention.

Mediation Logic and Research Model

Taken together, the present study proposes a model in which Dunhuang-inspired avatar costume skins first generate positive evaluative response at the level of Fashion-Oriented Visual Experience, which then contributes to Cultural Identification, and Cultural Identification subsequently contributes to Purchase Intention and Communication Intention. In this framework, Cultural Identification serves as the key mediating mechanism linking visual evaluation to downstream player response.

Importantly, this model does not directly test cultural discount. Rather, it examines whether visually accessible and fashion-oriented digital presentation is associated with positive cultural and behavioral responses under conditions in which players may have limited prior familiarity with Dunhuang heritage.

Based on this logic, the study proposes the following mediation hypotheses:

- H4a.** Cultural Identification mediates the relationship between Fashion-Oriented Visual Experience and Purchase Intention.
- H4b.** Cultural Identification mediates the relationship between Fashion-Oriented Visual Experience and Communication Intention.

Consistent with this logic, the proposed model is specified as a fully mediated conceptual model in which Fashion-Oriented Visual Experience is expected to influence downstream behavioral intentions through Cultural Identification. The proposed relationships are summarized in Table 2.

For conceptual clarity, the focal constructs are defined as operational constructs used in the present study and summarized in Table 1.

Table 1. Conceptual definitions of key constructs

Construct	Operational definition in this study	Representative references
Fashion-Oriented Visual Experience	Players' evaluative response to the aesthetic appeal, stylization, modernity, and fashion-related attractiveness of Dunhuang-inspired avatar costume skins	Moshagen & Thielsch (2010); Hamari (2015); Wanick et al. (2018)
Cultural Identification	Players' affective sense of connection, affinity, or symbolic closeness to the Chinese cultural imagery represented in Dunhuang-inspired skins	Cheung & Thadani (2012); Kim & Hyun (2012)
Purchase Intention	Players' willingness or likelihood to purchase Dunhuang-inspired avatar costume skins	Hamari (2015); Lehdonvirta (2009)
Communication Intention	Players' willingness to share, recommend, discuss, or circulate Dunhuang-inspired skins and related cultural imagery	Cheung & Thadani (2012); Kim & Hyun (2012)

Table 2. Summary of hypotheses

Hypothesis	Proposed relationship
H1	Fashion-Oriented Visual Experience → Cultural Identification
H2	Cultural Identification → Purchase Intention
H3	Cultural Identification → Communication Intention
H4a	Fashion-Oriented Visual Experience → Cultural Identification → Purchase Intention
H4b	Fashion-Oriented Visual Experience → Cultural Identification → Communication Intention



Figure 1. Three selected Dunhuang-inspired avatar costume skins used as research stimuli

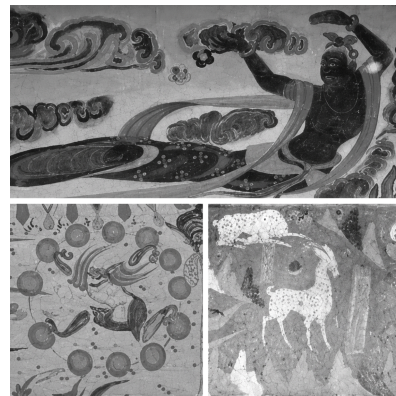


Figure 2. Corresponding Dunhuang mural references for the selected skins

Note. Figure 1 source: Tencent Games (n.d.); Figure 2 source: Dunhuang Academy (n.d.).

Methodology

Research Design

This study adopts a quantitative research design to examine how Dunhuang-inspired avatar costume skins function in cross-cultural digital game environments. The core objective is to test the relationships among Fashion-Oriented Visual Experience, Cultural Identification, Purchase Intention, and Communication Intention through survey-based structural equation modeling. The selected Dunhuang-inspired skins serve as visual stimuli rather than as an independent case-analysis component.

Selection of the Game and Dunhuang-Inspired Skins

The empirical context of this study is Honor of Kings, a major multiplayer online game with high market visibility and a large international player base. The game was selected because it has strong commercial influence, broad circulation in digital game markets, and multiple culturally themed skins derived from Chinese heritage elements.

The present study focuses specifically on avatar costume skins rather than background skins, interface skins, or effect-only skins. These skins directly modify the wearable appearance of game characters, including clothing, accessories,

silhouette, and decorative visual style, and are therefore more appropriate for examining Fashion-Oriented Visual Experience and its relationship with Cultural Identification.

Three Dunhuang-inspired skins were selected as research stimuli: Yang Yuhuan – Encountering the Flying Apsaras, Lü Bu – Encountering the Divine Drum, and Yao – Encountering the Divine Deer. These skins were chosen because they incorporate recognizable Dunhuang-inspired visual elements such as mural-based color schemes, flying apsara imagery, decorative ribbon forms, deer imagery, and stylized costume details. All three belong to the same category of avatar costume skins and thus provide comparable stimulus materials for the present study. The selected stimuli are summarized in Table 3.

Participants and Data Collection Procedure

Data were collected through an online survey targeting overseas players with prior experience in Honor of Kings or familiarity with character skins in MOBA-style games. Participants were recruited through international gaming communities on Reddit and Discord, together with a Qualtrics panel used to increase sample diversity. Before beginning the survey, all participants were shown visual stimulus materials presenting the selected Dunhuang-inspired skins.

The three stimuli were presented together on a single stimulus page in the order listed in Table 3, accompanied by

Table 3. Selected Dunhuang-inspired skins used as research stimuli

Skin name	Game	Character	Release year	Skin type	Main visual features	Heritage source
Encountering the Flying Apsaras	Honor of Kings	Yang Yuhuan	2018	Avatar costume skin	Flowing ribbons, mural-inspired orange-blue palette, celestial music imagery	Dunhuang flying apsara murals
Encountering the Divine Drum	Honor of Kings	Lü Bu	2021	Avatar costume skin	Thunder motifs, mural-style ornamentation, dramatic gold-cyan styling	Dunhuang thunder deity imagery
Encountering the Divine Deer	Honor of Kings	Yao	2021	Avatar costume skin	Deer-inspired costume structure, warm-cool contrast, mural-derived decorative motifs	Nine-Colored Deer mural tradition

Table 4. Sample profile

(N = 328)

Category	Group	n	%
Region	North America	92	28.0
	Europe	109	33.2
	Southeast Asia	127	38.8
Gender	Male	169	51.5
	Female	151	46.0
	Prefer not to say	8	2.5
Age	18–24	145	44.2
	25–34	127	38.7
	35–44	41	12.5
	45+	15	4.6
Prior familiarity with game skins	Yes	234	71.3
	No	94	28.7

the corresponding character and skin names. The survey did not manipulate presentation order and did not ask respondents to evaluate each skin separately. Respondents were instructed to review the full stimulus set before answering the measurement items; therefore, the closed-ended responses used in the SEM analysis represent an overall evaluation of the Dunhuang-inspired skin set rather than separate ratings for individual skins.

A total of 381 responses were initially collected. After excluding incomplete questionnaires, failed attention-check cases, excessively short completion times, and patterned responses, 328 valid responses were retained for analysis. The final sample included respondents from North America (28.0%), Europe (33.2%), and Southeast Asia (38.8%). The sample was 51.5% male, 46.0% female, and 2.5% preferred

not to say. The largest age group was 18–24 years (44.2%), followed by 25–34 years (38.7%), 35–44 years (12.5%), and 45 years or older (4.6%). Most respondents reported previous experience with multiplayer online games, and 71.3% indicated prior familiarity with cosmetic or character skins.

In addition to the closed-ended items, the survey included two open-ended questions asking respondents how they perceived the Dunhuang-inspired skins and whether such designs stimulated curiosity about Chinese culture. A total of 186 valid textual responses were retained for supplementary qualitative interpretation and coded into three recurring themes: visual attractiveness, limited cultural understanding, and curiosity about Chinese culture. These responses were used only as descriptive support for the quantitative findings.

Table 5. Measurement items

Construct	Code	Item wording	Source	Adapted from
Fashion-Oriented Visual Experience	FVE1	The Dunhuang-inspired skins are visually attractive.	Moshagen & Thielsch (2010)	Adapted to game skin context
	FVE2	These skins look stylish and fashionable.	Wanick et al. (2018)	Adapted to avatar costume skins
	FVE3	The design of these skins feels modern and refined.	Moshagen & Thielsch (2010)	Adapted to heritage-based skins
	FVE4	The visual presentation of these skins is distinctive.	Hamari (2015)	Adapted to virtual appearance goods
Cultural Identification	CI1	These skins make me feel closer to Chinese culture.	(Kim & Hyun, 2012)	Adapted to Dunhuang-inspired skins
	CI2	I feel positively connected to the cultural imagery in these skins.	Cheung & Thadani (2012)	Adapted to heritage-based digital content
	CI3	These skins make me feel more culturally drawn to Chinese aesthetic imagery.	(Kim & Hyun, 2012)	Revised to better reflect affinity-based identification
	CI4	I can identify emotionally with the cultural atmosphere conveyed by these skins.	Cheung & Thadani (2012)	Adapted to game skin context
Purchase Intention	PI1	I would consider purchasing a skin like this.	Hamari (2015)	Adapted to in-game skin purchase
	PI2	If available, I would be willing to pay for this type of skin.	Lehdonvirta (2009)	Adapted to virtual goods context
	PI3	I am likely to buy a Dunhuang-inspired skin in the future.	Hamari (2015)	Adapted to heritage-themed skins
Communication Intention	COI1	I would share or recommend these skins to others.	Cheung & Thadani (2012)	Adapted to game-related sharing
	COI2	I would talk about these skins on social media or gaming communities.	Cheung & Thadani (2012)	Adapted to digital communication context
	COI3	I would like to introduce these skins to people interested in game design or culture.	(Kim & Hyun, 2012)	Adapted to heritage-related content

Ethical Considerations and Data Quality Control

Participation was voluntary and anonymous. Before entering the questionnaire, respondents were informed that the survey was intended for academic research only, that no personally identifying information would be disclosed, and that they could withdraw at any time before submission. Participants provided informed consent electronically.

To improve data reliability, incomplete questionnaires, failed attention-check cases, unusually short responses, straightlining patterns, and duplicated entries identified through platform-based screening were removed where applicable. Participants recruited through the online panel received small platform-based compensation in line with standard survey practice.

Measures

All constructs were measured using a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The measurement items were adapted from prior studies and contextually reworded to fit the setting of Dunhuang-inspired avatar costume skins.

Fashion-Oriented Visual Experience was measured with four items capturing the perceived visual attractiveness, modernity, stylistic distinctiveness, and fashionability of the Dunhuang-inspired skins, drawing on visual aesthetics research and studies on virtual goods and digital appearance (Hamari, 2015; Moshagen & Thielsch, 2010; Wanick et al., 2018).

Cultural Identification was measured with four items assessing respondents' affective sense of cultural affinity,

Table 6. Reliability and convergent validity

Construct	Item	Loading	Cronbach's α	CR	AVE
Fashion-Oriented Visual Experience	FVE1	0.82	0.88	0.91	0.71
	FVE2	0.88			
	FVE3	0.84			
	FVE4	0.83			
Cultural Identification	CI1	0.79	0.87	0.90	0.69
	CI2	0.85			
	CI3	0.86			
	CI4	0.81			
Purchase Intention	PI1	0.84	0.85	0.90	0.74
	PI2	0.88			
	PI3	0.85			
Communication Intention	COI1	0.74	0.83	0.85	0.60
	COI2	0.81			
	COI3	0.77			

symbolic closeness, and affinity-oriented response to the Chinese cultural imagery represented in the skins, adapted from cross-cultural identification and digital communication research (Cheung & Thadani, 2012; Kim & Hyun, 2012).

Purchase Intention was measured with three items examining the likelihood of buying the skin if available under normal in-game purchase conditions, based on virtual goods and consumer intention research (Hamari, 2015; Lehdonvirta, 2009).

Communication Intention was measured with three items assessing willingness to recommend, share, or discuss the Dunhuang-inspired skins or related cultural content with others, based on electronic word-of-mouth research (Cheung & Thadani, 2012).

Data Analysis Strategy

The data analysis proceeded in two stages. First, a measurement model assessment was conducted through confirmatory factor analysis (CFA) to examine factor loadings, internal consistency, convergent validity, and discriminant validity. Reliability was assessed using Cronbach's alpha and composite reliability (CR), convergent validity using average variance extracted (AVE), and discriminant validity using the Fornell-Larcker criterion and the heterotrait-monotrait ratio (HTMT).

Second, a structural model assessment was conducted using structural equation modeling (SEM) to test the hypothesized paths among the constructs. Indirect effects were tested using bootstrapping procedures to assess the mediating role of Cultural Identification.

To reduce potential common method bias, item order was randomized and anonymity was emphasized throughout the survey process. In addition, Harman's single-factor test was conducted as a basic diagnostic check. The first unrotated factor accounted for 34.7% of the total variance, which is below the commonly used threshold of 50%, suggesting that common method bias was unlikely to substantially affect the findings.

Results

Measurement Model Assessment

Before testing the structural relationships, a preliminary diagnostic check for common method bias was conducted. Harman's single-factor test indicated that the first unrotated factor explained less than 50% of the total variance, suggesting that common method bias was not likely to be severe. Confirmatory factor analysis (CFA) then showed acceptable model fit: $\chi^2/df = 2.21$, CFI = 0.958, TLI = 0.949,

RMSEA = 0.061, and SRMR = 0.046. This result indicates that the four constructs were empirically distinguishable and that respondents did not treat the questionnaire as a single undifferentiated favorable evaluation. Substantively, overseas players' evaluations of visual and fashion appeal, cultural affinity, purchase intention, and communication intention formed related but separate dimensions of response.

All standardized factor loadings exceeded 0.70, ranging from 0.74 to 0.88. Cronbach's alpha values ranged from 0.83 to 0.89, composite reliability (CR) values from 0.85 to 0.91, and average variance extracted (AVE) values from 0.60 to 0.71, indicating satisfactory internal consistency and convergent validity. These values suggest that each item contributed strongly to its intended latent construct, so the observed responses can be interpreted as stable perceptions rather than weak or inconsistent measurements. The AVE results further indicate that the constructs captured more variance from their own indicators than from measurement error.

Discriminant validity was further supported. As shown in Table 7, the square root of AVE for each construct exceeded its correlations with the other constructs. In addition, all HTMT values were below 0.85, indicating acceptable discriminant validity. This means that the constructs, although positively related, captured different aspects of the response process. In particular, Cultural Identification was not simply another expression of Purchase Intention or Communication Intention, but a distinct affective and symbolic connection to the Dunhuang-inspired imagery.

Descriptive statistics and correlations are presented in Table 9. Fashion-Oriented Visual Experience showed the highest mean score ($M = 5.68$, $SD = 0.84$), followed by Cultural Identification ($M = 5.21$, $SD = 0.90$), Communication Intention ($M = 5.12$, $SD = 0.93$), and Purchase Intention ($M = 5.06$, $SD = 0.97$). All correlations were positive and significant ($p < .001$). The relatively high mean for Fashion-Oriented Visual Experience suggests that

Table 7. Discriminant validity (Fornell–Larcker criterion)

Construct	FVE	CI	PI	COI
Fashion-Oriented Visual Experience (FVE)	0.843			
Cultural Identification (CI)	0.61	0.831		
Purchase Intention (PI)	0.47	0.58	0.860	
Communication Intention (COI)	0.43	0.55	0.59	0.775

Note: Diagonal values are the square roots of AVE.

Table 8. HTMT ratios

Construct pair	HTMT
FVE – CI	0.73
FVE – PI	0.57
FVE – COI	0.52
CI – PI	0.69
CI – COI	0.66
PI – COI	0.71

Table 9. Means, standard deviations, and correlations

Construct	Mean	SD	1	2	3	4
1. Fashion-Oriented Visual Experience	5.68	0.84	—			
2. Cultural Identification	5.21	0.90	0.61***	—		
3. Purchase Intention	5.06	0.97	0.47***	0.58***	—	
4. Communication Intention	5.12	0.93	0.43***	0.55***	0.59***	—

Note. *** $p < .001$.

respondents first approached the skins as visually attractive and fashionable digital appearances. At the same time, the slightly lower means for Purchase Intention and Communication Intention indicate that aesthetic appreciation did not automatically become behavioral intention, which supports the need to examine Cultural Identification as an intervening mechanism.

Structural Model Assessment

After confirming the adequacy of the measurement model, structural equation modeling was conducted to test the proposed hypotheses. Consistent with the theorized fully mediated model, the structural analysis focused on the indirect effects of Fashion-Oriented Visual Experience on the two behavioral outcomes through Cultural Identification. The structural model also demonstrated acceptable fit: $\chi^2/df = 2.29$, CFI = 0.952, TLI = 0.944, RMSEA = 0.063, and SRMR = 0.049.

As hypothesized, Fashion-Oriented Visual Experience had a significant positive effect on Cultural Identification ($\beta = 0.61$, $t = 9.84$, $p < .001$), supporting H1. Cultural Identification, in turn, had significant positive effects on Purchase

Intention ($\beta = 0.56$, $t = 8.12$, $p < .001$), supporting H2, and on Communication Intention ($\beta = 0.52$, $t = 7.66$, $p < .001$), supporting H3. The model explained 37% of the variance in Cultural Identification, 31% in Purchase Intention, and 27% in Communication Intention. These results indicate that visually accessible and fashion-oriented design plays a substantive role in forming cultural affinity toward the represented heritage imagery. They also show that players who feel stronger cultural closeness are more willing both to purchase the skin as a virtual appearance product and to communicate about it with others.

To test the mediating role of Cultural Identification, indirect effects were examined using bootstrapping with 5,000 resamples. The indirect effect of Fashion-Oriented Visual Experience on Purchase Intention through Cultural Identification was significant ($\beta = 0.34$, 95% CI [0.24, 0.45], $p < .001$), supporting H4a. Likewise, the indirect effect of Fashion-Oriented Visual Experience on Communication Intention through Cultural Identification was significant ($\beta = 0.32$, 95% CI [0.21, 0.42], $p < .001$), supporting H4b. Because both confidence intervals excluded zero, the mediation results suggest that visual appeal becomes

Table 10. Structural model results

Hypothesis	Path	β	t-value	p-value	Result
H1	Fashion-Oriented Visual Experience → Cultural Identification	0.61	9.84	< .001	Supported
H2	Cultural Identification → Purchase Intention	0.56	8.12	< .001	Supported
H3	Cultural Identification → Communication Intention	0.52	7.66	< .001	Supported

Table 11. Mediation effects

Hypothesis	Indirect path	Indirect effect (β)	95% CI	p-value	Result
H4a	FVE $\rightarrow$ CI $\rightarrow$ PI	0.34	[0.24, 0.45]	< .001	Supported
H4b	FVE $\rightarrow$ CI $\rightarrow$ COI	0.32	[0.21, 0.42]	< .001	Supported

behaviorally meaningful when it is translated into an affective and symbolic sense of connection with the cultural imagery. The similar size of the two indirect effects further implies that Cultural Identification supports both market-oriented response and communication-oriented response.

Taken together, the structural results show that the positive reception of Dunhuang-inspired avatar costume skins is not explained by visual attractiveness alone. Rather, the data support a process in which fashion-oriented visual experience encourages Cultural Identification, and this identification then strengthens both purchase-related and communication-related intentions. This provides a more precise interpretation of the empirical results: overseas players may respond to heritage-themed skins when the designs are visually accessible enough to support a personal sense of cultural affinity.

Supplementary Qualitative Evidence

Supplementary analysis of the 186 valid open-ended responses identified three recurring themes: visual attractiveness (40.9%), curiosity about Chinese culture (32.8%), and limited cultural understanding (26.3%) (Table 12). These patterns help interpret the quantitative results. The promi-

nence of visual attractiveness indicates that respondents mainly noticed the skins as stylized and appealing avatar appearances, while the curiosity theme suggests that such visual appeal could open a limited pathway toward cultural interest. At the same time, the limited-cultural-understanding theme cautions against interpreting positive responses as evidence of deep heritage comprehension.

Integrated Discussion, Implications, and Conclusion

This study examined how Dunhuang-inspired avatar costume skins function in cross-cultural digital game environments by focusing on the relationships among Fashion-Oriented Visual Experience, Cultural Identification, Purchase Intention, and Communication Intention. The results showed that Fashion-Oriented Visual Experience significantly enhanced Cultural Identification, and that Cultural Identification, in turn, positively influenced both Purchase Intention and Communication Intention. These findings indicate that visually attractive and fashion-oriented digital appearance plays an important role in shaping overseas players' responses to

Table 12. Summary of open-ended response themes

(n = 186)

Theme	Description	n	%	Representative quotation
Visual attractiveness	Respondents emphasized the beauty, style, and distinctive visual design of the skins	76	40.9	"The skins look beautiful and artistically distinctive."
Curiosity about Chinese culture	Respondents said the skins increased their curiosity about Dunhuang or Chinese culture	61	32.8	"I do not know much about Dunhuang, but the design makes me want to learn more."
Limited cultural understanding	Respondents acknowledged positive interest but also limited knowledge of the deeper heritage background	49	26.3	"I like the style, although I do not fully understand the cultural meaning behind it."

Dunhuang-inspired avatar costume skins.

The findings also offer a cautious interpretive implication for discussions of cultural discount in interactive digital environments. Cultural discount was not directly measured in this study, and the results should not be read as evidence that cultural discount was reduced or overcome. Rather, the findings suggest that when heritage imagery is translated into visually accessible, wearable, and aesthetically attractive avatar costume skins, overseas players may still form favorable identification and behavioral intentions under conditions in which cultural unfamiliarity could otherwise limit reception. Thus, the study points to a possible pathway through which heritage-themed digital design may soften the practical effects of cultural distance, while leaving direct tests of cultural discount to future research.

Another important finding is the mediating role of Cultural Identification. The results suggest that visual attractiveness alone is not sufficient to explain downstream player responses. Rather, Fashion-Oriented Visual Experience influences market-related outcomes through players' affective and symbolic connection to the cultural imagery represented in the skins. This helps explain how heritage-derived digital design can move from visual appeal to both purchasing and communicative responses in global game environments.

The distinction between Purchase Intention and Communication Intention is also meaningful. Purchase Intention reflects willingness to acquire the skin as a virtual appearance product, whereas Communication Intention reflects willingness to share, discuss, or recommend the skin and its cultural content. The findings therefore suggest that Dunhuang-inspired avatar costume skins generate value not only as purchasable digital commodities but also as shareable cultural media. In this respect, the study contributes to research on game skins and digital cultural content by conceptualizing avatar costume skins as fashion-related digital appearance products rather than merely cosmetic items.

These findings also carry practical implications. For game developers, heritage-based skins appear more likely to generate positive responses when they emphasize stylization, visual accessibility, and fashion-related appeal rather than relying only on literal historical reproduction. For cultural institutions, collaboration with digital platforms may streng-

then the visibility and legitimacy of heritage-inspired content and expand its circulation among younger and international audiences. For platform marketers, Dunhuang-inspired avatar costume skins should be viewed not only as virtual goods but also as communication assets, since stronger Cultural Identification may encourage sharing, recommendation, and discussion in online communities.

Overall, this study shows that Dunhuang-inspired avatar costume skins in *Honor of Kings* operate as heritage-based digital appearance products that can generate meaningful cross-cultural responses through Cultural Identification. Although the study does not claim that digitalization eliminates cultural distance, the findings suggest that visual elements derived from Dunhuang heritage may become more approachable and socially meaningful when translated into wearable digital appearance forms. The theoretical contribution therefore lies not in directly extending cultural discount theory empirically, but in showing how Fashion-Oriented Visual Experience and Cultural Identification can provide a useful explanatory framework for interpreting overseas players' responses to heritage-themed digital skins.

This study has several limitations. First, the sample was limited to overseas respondents familiar with digital games, which may restrict generalizability to other audiences or media contexts. Second, the research focused on *Honor of Kings* and three selected Dunhuang-inspired skins, so the findings should be understood as context-specific empirical evidence rather than as conclusions that can be immediately generalized to all heritage-themed skins, other game genres, non-gamer audiences, or other cultural traditions. Third, the qualitative responses were used only as supplementary evidence and do not constitute an independent qualitative analysis. Fourth, although the study discusses cultural discount as a theoretical background, it did not directly measure cultural discount, perceived authenticity, or cultural understanding as separate constructs.

Future research could compare different heritage traditions, different skin types, or different game platforms to test whether similar mechanisms hold across contexts. Additional studies may also distinguish more clearly among visual appeal, perceived authenticity, cultural understanding, curiosity, and cultural identification. Further research could

also incorporate direct measures of cultural discount or cultural distance in order to examine more explicitly how heritage-derived digital content is received in cross-cultural game environments.

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