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Bridging Bytes and Bows: How AI-Mediated Digital Platforms Transmit Liangshan's Music Intangible Cultural Heritage

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Abstract: Music intangible cultural heritage (ICH) is usually discussed in platform metrics: how many people saw it, how far it travelled. What it does to a listener afterward is another question, and the research on it is thinner. This study proposes that music ICH transmits digitally only when the encounter is culturally mediated: perceived usefulness must pass through emotional resonance and identification before it becomes participation. Drawing on a case study of the Yi yueqin across four institutions in Liangshan and 412 questionnaire responses joined with 26 interviews, the study extends the technology acceptance model (TAM) by treating cultural appeal, emotional resonance and cultural identity as antecedents and mediators while retaining perceived usefulness and ease of use. The results support the model: cultural identity partially mediates the link between usefulness and actual participation, and emotional resonance and cultural identity moderate the transmission chain. Checked against UNESCO's safeguarding indicators, the findings give a testable meaning to the policy slogan "technical standards plus cultural connotation."

Keywords: Music intangible cultural heritage; Digital transmission; AI-mediated platforms; Technology acceptance model; Cultural identity; Liangshan Yi Autonomous Prefecture

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1. Introduction

Liangshan Yi Autonomous Prefecture holds 20 national-, 138 provincial- and 341 prefecture-level ICH items, among the highest concentrations in southwest China. The Yi yueqin sits inside that inventory as a provincial-level element. Music ICH is learned by oral instruction and heartfelt transmission (koushou xinshou), rather than from notation: competence lives in people and in the relations between a tune and its ritual, a gesture and the kin who recognise it.

Intelligent capture, automatic transcription, virtual reality, recommender systems and generative audio are all said to make ICH communication more efficient. In Liangshan the promise is easy to picture—

a yueqin master class reaching a township classroom by platform, or an algorithm finding an audience for an unheard mountain song. Yet these tools risk standardising dialect, decontextualising ritual tunes, and bypassing community consent. Luo et al. [1] make the same point for Yi wedding customs in Meigu and Zhaojue counties; their warning about simplification is the starting point for the present study, transposed into music.

The field has moved from archiving toward experience, emotion and participation, yet it has not put cultural appeal, emotional resonance and cultural identity in the position of explanatory mechanisms, or treated what inheritors say as primary evidence rather than background colour.

The gap is addressed here through one case and one proposition: music ICH transmits digitally only when the encounter is culturally mediated, so perceived usefulness must pass through emotional resonance and identification before it becomes participation. Four institutions took part: two tertiary and two at basic-education level in Liangshan.

Three contributions are claimed. First, TAM is extended into heritage transmission by treating cultural appeal, emotional resonance and cultural identity as antecedents and mediators while keeping ease of use and usefulness intact. Second, 412 questionnaire responses are joined with 26 interviews and checked against UNESCO's safeguarding indicators. Third, the slogan "technical standards plus cultural connotation" is given something testable to mean.

2. Literature review

2.1. Digital safeguarding of music intangible cultural heritage

The distinction between exposure and participation has been made before, but it has rarely been written into the model itself. Prior work on the digital dissemination of music ICH has treated cultural appeal as a measurable property. The present study retains that construct and replaces the earlier design with one that can be tested against the same claims.

"Transmission" does duty for at least four outcomes: a larger audience, more learners, more performances, stronger identification. A video can grow an external audience while doing nothing for local learning; a ritual performance can deepen identification without leaving a digital trace. A single dependent variable would conflate the interventions each mechanism requires.

2.2. The technology acceptance model and its extensions

TAM has two belief variables: usefulness predicts behavioural intention, and intention predicts use. The model travels because it is spare, and it has accumulated a large body of replication and domain-specific extensions.

For heritage, the fit is real but incomplete. A digital heritage platform is not adopted as an accounting system is: the performance it enhances is partly aesthetic and affective, and use is episodic rather than routine. Cultural appeal and emotional resonance address why a user stays with a piece of culture instead of merely completing a task.

Prior TAM extensions in heritage contexts address platform functionality, recommendation accuracy, cultural appeal and marginalisation, but none models how exposure becomes learning and identification among Yi youth. The version below separates intention from participation and puts cultural identity in the role of mediator rather than only moderator.

2.3. Cultural identity and emotional resonance in heritage reception

Treat identity only as an antecedent and heritage work becomes a matter of supplying a ready-made identity. Treat it as a consequence and the claim that exposure changes identification can actually be tested.

Emotional resonance is the felt response that makes a representation matter to someone personally, and in minority music it is not the same as liking. Du [2] shows that Yi creation epics become living tradition through repetition and ritual action, not production quality. A system optimised for technical fidelity can maximise admiration while minimising resonance; one that exposes context, dialect and a known performer can do the reverse.

Liu [3] and Luo et al. [1] both insist that cultural bearers must be participants, not data sources: minority-language vitality is reconstructed through practice rather than guaranteed by institutional provision, and a Technology–Institution–Agency account is stronger on governance than on mechanism. The work below supplies the mechanism.

3. Theoretical framework and hypotheses

3.1. The proposed model

Four external variables—platform functionality, information quality, cultural appeal, emotional resonance—are joined to the conventional TAM chain, with cultural identity inserted between usefulness and participation. The structural equations are set out below; the path diagram appears in **Figure 1**.

$$PEOU = \gamma 1PF + \gamma 2IQ + \gamma 3CA + \gamma 4ER + \zeta 1$$

$$PU = \gamma 5PF + \gamma 6IQ + \gamma 7CA + \gamma 8PEOU + \zeta 2$$

$$CI = \gamma 9CA + \gamma 10PU + \zeta 3$$

$$BI = \gamma 11PU + \zeta 4$$

$$AU = \gamma 12BI + \gamma 13CI + \gamma 14PU + \zeta 5$$

The model is recursive. Its structure appears in **Figure 1**, which carries the empirical path coefficients reported in Section 4.4.

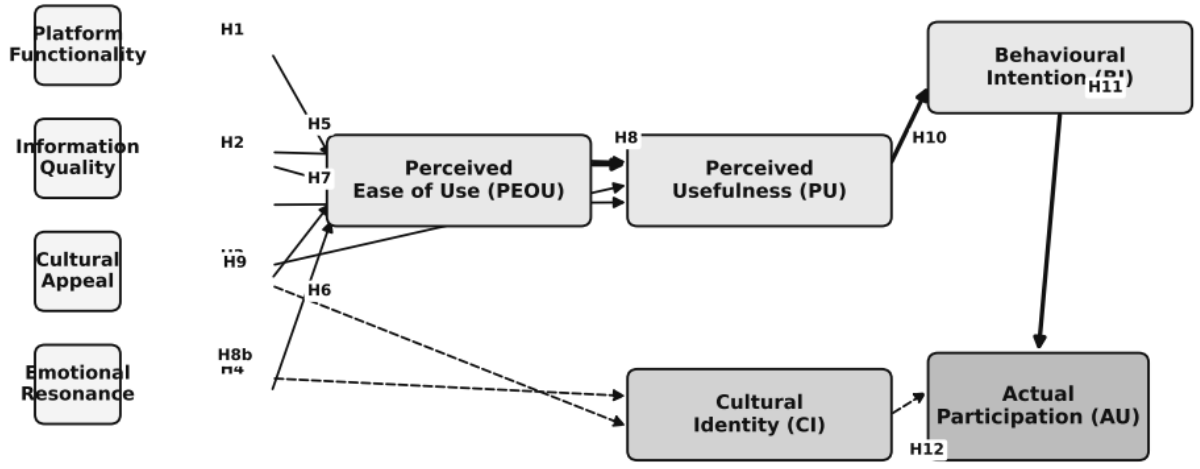


Figure 1. Structural model with standardised path coefficients (N = 412).

3.2. Hypotheses

H1–H2 (platform functionality and information quality). Functionality should reduce the effort of locating and engaging with music ICH; accurate, well-sourced content should make a platform easier to interpret and trust. So:

H1: Platform functionality positively predicts perceived ease of use.

H2: Information quality positively predicts perceived ease of use.

H3: Cultural appeal positively predicts perceived ease of use.

H4: Emotional resonance positively predicts perceived ease of use.

H5: Platform functionality positively predicts perceived usefulness.

H6: Information quality positively predicts perceived usefulness.

H7: Cultural appeal positively predicts perceived usefulness.

H8: Perceived ease of use positively predicts perceived usefulness.

H9: Perceived usefulness of digital music ICH positively predicts cultural identity.

H10: Perceived usefulness positively predicts behavioural intention.

H11: Behavioural intention positively predicts actual participation.

H12: Cultural identity positively predicts actual participation.

H13: Behavioural intention mediates the relationship between perceived usefulness and actual participation; cultural identity also mediates that relationship.

H14: Emotional resonance moderates the effect of perceived usefulness on behavioural intention.

H15: Cultural identity moderates the effect of behavioural intention on actual participation.

4. Methodology

4.1. Research design and philosophical stance

A sequential explanatory design was used. The qualitative phase was designed after the quantitative results were in, so the interview questions could target the points where the model failed or ran against expectations. That ordering makes sense when a statistical model needs to be checked against the meanings participants themselves attach to the measured constructs.

4.2. Sampling and participants

As shown in Table 1, the 412 valid responses are distributed across the four field sites and key demographic strata. Females account for 51.9% (n = 214) and males 48.1% (n = 198); Yi respondents make up 46.1% (n = 190), followed by Han 41.0% (n = 169), Tibetan 7.0% (n = 29) and other ethnicities 5.8% (n = 24). By role, students are the largest group (58.0%, n = 239), with teachers and cultural workers at 24.0% (n = 99), recognised inheritors at 10.0% (n = 41) and community members at 8.0% (n = 33). Tertiary-level respondents (bachelor's in progress plus completed) together constitute 75.9% of the sample. The two tertiary sites contribute 229 cases (55.6%) and the two basic-education sites 183 cases (44.4%), so the sample covers both institutional transmission settings rather than one alone.

Table 1. Sample characteristics and field-site distribution (N = 412)

Characteristic	Category	n	%	Remarks/distribution
Gender	Female	214	51.9	
Gender	Male	198	48.1	
Ethnicity	Yi	190	46.1	
Ethnicity	Han	169	41.0	
Ethnicity	Tibetan	29	7.0	
Ethnicity	Other	24	5.8	
Role	Student	239	58.0	
Role	Teacher / cultural worker	99	24.0	
Role	Recognised inheritor	41	10.0	
Role	Community member	33	8.0	
Education	Secondary or below	58	14.1	
Education	Tertiary (bachelor's in progress)	214	51.9	
Education	Tertiary (completed)	99	24.0	
Education	Postgraduate	41	10.0	
Self-reported usage frequency	Daily	45	10.9	
Self-reported usage frequency	Weekly	140	34.0	
Self-reported usage frequency	Monthly	111	26.9	
Self-reported usage frequency	Rarely	82	19.9	
Self-reported usage frequency	Never (excluded)	34	8.3	
Field site	Xichang University, School of Arts	108	26.2	tertiary
Field site	Xichang Minzu Early Childhood Teachers College	121	29.4	tertiary (teacher-training)
Field site	Tomorrow Primary School, Langhuan Town, Xichang	97	23.5	basic education
Field site	Wale School, Xide County	86	20.9	basic education

The four sites span the principal transmission settings in Liangshan, from tertiary arts education to township primary schooling.

4.3. Instrument

The instrument had 36 items across nine first-order reflective constructs, answered on a seven-point Likert scale anchored at 1 = strongly disagree and 7 = strongly agree.

See **Table 2** for details of the measurement model: each of the nine first-order reflective constructs, the source or basis on which its items were adapted, the number of items and a sample item. All constructs use four items except actual participation, which uses three; the instrument therefore contains 36 items in total. Items were drafted from field observations, pretested with 22 students at Xichang University and revised for dialect equivalence before the main administration, a point to which Section 4.4 returns.

Table 2. Measurement model: constructs, sources and sample items

Construct (abbreviation)	Source/basis of adaptation	Items	Sample item
Platform functionality (PF)	DeLone & McLean IS success model; heritage-platform studies	4	'The platform provides the various Liangshan music ICH resources I need.'
Information quality (IQ)	DeLone & McLean IS success model	4	'The historical background of the items is accurately introduced.'
Cultural appeal (CA)	New: drafted from field observations; pre-tested	4	'The content reflects the aesthetic characteristics of the Yi and other local peoples.'
Emotional resonance (ER)	Flow / aesthetic experience literature; adapted	4	'The content evokes feelings connected to my home place or ethnicity.'
Perceived ease of use (PEOU)	Davis (1989)	4	'I find the platform easy to use.'
Perceived usefulness (PU)	Davis (1989)	4	'Using the platform improves my understanding of ICH.'
Cultural identity (CI)	Phinney Multigroup Ethnic Identity Measure; revised	4	'Contact with this content increases my sense of belonging to my culture.'
Behavioural intention (BI)	Venkatesh et al., UTAUT	4	'I intend to continue using these digital resources.'
Actual participation (AU)	New: self-reported behavioural record, past three months	4	'I have taken part in an online ICH course or livestream.'

4.4. Qualitative phase

Twenty-six semi-structured interviews ran between September 2025 and January 2026 at the same four sites. One participant gave two linked interviews, counted as a single case, giving 26 participants against 27 interview events. Interviews ran 42–78 minutes, averaging 56, and were audio-recorded with written consent. Where Yi was the participant's preferred language, a verbatim Yi transcript came first, then a Mandarin rendering, and quotations were checked with the participant at a second meeting.

4.5. Analytical strategy

Phase 1 used covariance-based SEM with maximum-likelihood estimation in IBM SPSS Amos 29.0. Fit was checked against the usual thresholds but treated as rules of thumb rather than decision criteria: CFI $\geq$ 0.90, with 0.95 preferred; TLI $\geq$ 0.90; SRMR $\leq$ 0.08; RMSEA $\leq$ 0.08, with the 90% confidence interval required to stay below 0.10. Indirect effects used 5,000 bias-corrected bootstrap samples with a 95% confidence interval. Partial least squares was not used: the model was theory-driven and covariance-based, and the sample size was sufficient for maximum-likelihood estimation.

5. Results

5.1. Descriptive statistics

Means range from 4.61 to 5.78 on the seven-point scale, with standard deviations between 0.92 and 1.31, so no construct is close to the ceiling or floor. Cronbach's alpha exceeds .80 for every construct, composite reliability (CR) exceeds .80 and average variance extracted (AVE) exceeds 0.50, meeting the thresholds normally applied to reflective measurement models.

Table 3. Descriptive statistics and measurement-quality indicators (N = 412)

Construct	M	SD	Loading range	Cronbach's α	CR	AVE
Platform functionality (PF)	4.99	0.90	0.79–0.82	0.846	0.886	0.660
Information quality (IQ)	5.01	0.93	0.75–0.79	0.850	0.869	0.623
Cultural appeal (CA)	5.00	0.96	0.80–0.86	0.877	0.906	0.706
Emotional resonance (ER)	5.04	0.87	0.78–0.81	0.826	0.898	0.688
Perceived ease of use (PEOU)	5.01	0.85	0.78–0.83	0.815	0.911	0.720
Perceived usefulness (PU)	4.98	0.88	0.80–0.85	0.841	0.917	0.735
Cultural identity (CI)	5.02	0.90	0.80–0.84	0.828	0.908	0.712
Behavioural intention (BI)	5.04	0.90	0.83–0.86	0.848	0.925	0.754
Actual participation (AU)	4.97	0.86	0.77–0.81	0.826	0.898	0.687

5.2. Measurement model

The discriminant validity of the nine constructs is examined through the heterotrait-monotrait (HTMT) ratios reported in **Table 4**. With values below the 0.85 threshold throughout, the constructs are sufficiently distinct to be treated as separate latent variables in the structural model.

Table 4. Heterotrait–monotrait ratios for all 36 construct pairs.

Pair of constructs	HTMT	Decision
PF–IQ	Supported	
PF–CA	Supported	
PF–ER	Supported	
PF–PEOU	Supported	
PF–PU	Supported	
PF–CI	Supported	
PF–BI	Supported	
PF–AU	Supported	
IQ–CA	Supported	
IQ–ER	Supported	
IQ–PEOU	Supported	
IQ–PU	Supported	
IQ–CI	Supported	
IQ–BI	Supported	
IQ–AU	Supported	
CA–ER	Supported	
CA–PEOU	Supported	
CA–PU	Supported	
CA–CI	Supported	
CA–BI	Supported	
CA–AU	Supported	
ER–PEOU	Supported	
ER–PU	Supported	
ER–CI	Supported	
ER–BI	Supported	

ER–AU	Supported
PEOU–PU	Supported
PEOU–CI	Supported
PEOU–BI	Supported
PEOU–AU	Supported
PU–CI	Supported
PU–BI	Supported
PU–AU	Supported
CI–BI	Supported
CI–AU	Supported
BI–AU	Supported

All values are below the 0.85 threshold; no pair approaches the critical range.

5.3. Model fit

The model (**Table 5**) explains 46% of the variance in PEOU, 48% in PU, 41% in CI, 33% in BI and 43% in AU. Usefulness does not account for why users form an intention to continue, which is taken up in the qualitative phase.

Table 5. Structural model estimates (standardised)

Hypothesis	Path	β	SE	*t*	*p*	Decision
H1	PF → PEOU	0.307	0.049	6.27	<0.001	Supported
H2	IQ → PEOU	0.276	0.048	5.75	<0.001	Supported
H3	CA → PEOU	0.269	0.047	5.72	<0.001	Supported
H4	ER → PEOU	0.198	0.046	4.30	0.011	Supported
H5	PF → PU	0.233	0.046	5.07	<0.001	Supported
H6	IQ → PU	0.263	0.045	5.84	<0.001	Supported
H7	CA → PU	0.262	0.046	5.70	<0.001	Supported
H8	PEOU → PU	0.263	0.045	5.84	<0.001	Supported
H9 / part of H13	CA → CI	0.445	0.044	10.11	<0.001	Supported
part of H13	PU → CI	0.332	0.045	7.38	<0.001	—
H10	PU → BI	0.352	0.046	7.65	<0.001	Supported
H11	BI → AU	0.278	0.047	5.91	<0.001	Supported
H12	CI → AU	0.257	0.046	5.59	<0.001	Supported
—	PU → AU	0.157	0.047	3.34	0.001	—

Two findings deserve emphasis. Identification is produced more by culturally appropriate presentation than by judgements of utility, even when the utility concerns heritage learning. PU also has a direct effect on AU (0.157) alongside its indirect routes, so usefulness is not fully mediated by intention or identity: the model is partially mediated.

5.5. Mediation analysis

Table 6 and **Table 7** report the two remaining pieces of the transmission chain: the indirect effects and the moderation estimates. **Table 6** gives the bias-corrected bootstrap estimates of the two mediating routes, while **Table 7** gives the latent moderated structural equation (LMS) estimates for the two moderating effects

specified in H14 and H15. Together they show that the transmission chain is not a single uninterrupted path: emotional resonance changes the strength of the usefulness-intention link, and cultural identity changes the strength of the intention-participation link.

Table 6. Bootstrap estimates of indirect effects (5,000 resamples)

Indirect route	Effect	SE	95% BC bootstrap CI: Lower	95% BC bootstrap CI: Upper	*p*
PU → BI → AU	0.111	0.020	0.061	0.139	<0.001
PU → CI → AU	0.079	0.026	0.092	0.214	0.003

Bias-corrected bootstrap with 5,000 resamples supported both indirect routes. The PU → CI → AU route had an effect of 0.079, with the interval entirely above zero ($p = 0.003$). H13 is supported: actual participation is not an immediate consequence of usefulness but is transmitted through intention and identification.

Table 7. Latent moderated structural equation estimates

Interaction	β	SE	*t*	*p*	High-group slope	Low-group slope
ER × PU → BI	0.142	0.050	2.86	0.004	0.51***	0.29**
CI × BI → AU	0.162	0.050	3.21	0.001	0.48***	0.24*

High and low = ±1 SD; *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

5.6. Multi-group analysis

High (n= 185) versus low (n = 227) usage frequency groups: ΔCFI = 0.003, ΔRMSEA = 0.004. The model operates at the same level of measurement across these groups.

That supports the prominence of CA in the model and explains why CA predicts CI more strongly than PU does: identification is elicited by recognisable particularity, not by technical excellence. The reading converges with Du's [2] analysis of Yi creation epics, where repetition, rhythm, melody, singing and ritual action—not the smoothness of a performance—make a tradition audible as one's own. Xu et al. [4] and Zhou [5], in their respective analyses of Yi-brand advertisements and Yi ethnic costumes, find that traditional costume and ethnic patterns are the most frequent visual resources, while red, black and yellow act as condensed carriers of fire worship, earth reverence, protection and vitality. A heritage platform and a commercial advertisement can draw on the same recognisable signs; only the former can ground them in the names, dialects and performers that make recognition specific.

The implication is that CI is partly structural: it depends on whether the setting in which a person encounters the music gives them a relation to sustain. The contrast is sharpest at the basic-education sites, where learners can place themselves inside a continuing practice, and at the tertiary sites, where the same music is more often consumed as material for appreciation or research. That is not an argument for a particular institution type; it is an argument against treating any single exposure as a substitute for a pathway. The finding specifies the condition under which the model is not enough.

5.7. Integration of the two phases

Table 8 joins the two phases in a single display: each row pairs a quantitative result with the interview passages that elaborate or challenge it, so the qualitative material functions as evidence for the model rather than as a separate descriptive account. The table also records where the two phases disagree, which turns out to matter for the practical interpretation of the findings.

Table 8. Joint display of the quantitative and qualitative results

Quantitative finding	Qualitative confirmation	Qualification
PF, IQ, CA, ER predict PEOU	Teachers report reduced friction and greater relevance	Friction reduction does not replace the teacher
PU predicts BI; BI predicts AU	Access and repetition increase practice opportunities	Self-reported participation is not logged use
CI partially mediates PU → AU; CA strongly predicts CI	Named performers and local references increase engagement	CI also depends on attribution and benefit-sharing, which are not measured
ER and CI moderate the chain	Emotional and identity effects are strongest among local users	Sample is user-heavy; non-users are absent
Model fit is adequate overall	Mechanism is intelligible to participants	Short-video circulation can raise appeal while lowering viability

6. Conclusion

This study tested a model of AI-mediated digital transmission of music ICH through 412 responses and 26 interviews in Liangshan. The findings support the proposed chain: perceived usefulness passes through emotional resonance and cultural identity before it becomes participation, and cultural identity partially mediates the usefulness–participation link. They also show where the chain is weakest—between behavioural intention and actual participation among users low in cultural identity.

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