Design Thinking and Cultural Innovation as Strategic Catalysts for Managing Creative Technology in Local Creative Economy Development

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Abstract

Local creative economies must balance cultural preservation with continuous innovation, yet the integrated mechanisms linking design capability, cultural transformation, and technology management remain insufficiently examined. This study investigates how Design Thinking, Cultural Innovation, and Creative Technology Management collectively shape organizational innovation capability and creative economy outcomes. A mixed-methods approach was employed with 300 participants from diverse local creative organizations. Quantitative analyses including descriptive statistics, correlation analysis, and Structural Equation Modeling (SEM) showed moderate to high levels across all competencies and confirmed significant positive relationships among constructs. SEM results demonstrate that Design Thinking enhances both innovation performance (β = .41, p < .001) and Cultural Innovation (β = .52, p < .001), while Creative Technology Management mediates the conversion of cultural value into scalable economic outcomes (β = .27, p < .01). Qualitative thematic analysis further supports these findings, revealing community co-creation, cultural meaning-making, and technology-enabled amplification as central mechanisms. Overall, the integration of human-centered design, culturally grounded innovation, and adaptive technology management provides a strategic foundation for sustainable local creative economy development. The study contributes conceptually by clarifying how design, culture, and technology co-evolve, and offers practical implications for strengthening innovation capabilities within creative ecosystems.

Keywords: Design Thinking, Cultural Innovation, Strategic Catalysts, Managing Creative Technology, Local Creative Economy Development

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Introduction

Local creative economies have become increasingly important to regional development, particularly in countries such as Thailand where cultural heritage, craftsmanship, and community-based knowledge play a central role in economic growth, social cohesion, and identity formation (UNCTAD, 2022; UNESCO, 2023). Recent national and international reports indicate that Thailand's creative industries contribute substantially to GDP and employment, especially in sectors such as design, crafts, digital content, and cultural tourism (OECD, 2021; UNCTAD, 2022). Despite this economic significance, many local creative enterprises continue to face persistent challenges related to limited innovation capability, uneven technological readiness, and difficulties in translating cultural assets into competitive and scalable creative products (Flew, 2022; Howkins, 2022). These challenges have intensified under conditions of rapid digital transformation, platform-based competition, and changing consumer expectations, underscoring the need for strategic frameworks that integrate design, culture, and technology in a coherent and context sensitive manner (Hartley et al., 2020; Manovich, 2020).

Although Design Thinking has been widely recognized as a driver of human-centered innovation and organizational learning (Brown, 2019; Buchanan, 2021), its role in strengthening local creative capability particularly in conjunction with Cultural Innovation and Creative Technology Management remains insufficiently understood. Existing research often examines these domains in isolation: design studies focus on problem framing and iterative experimentation (Carlgren et al., 2016), cultural economics emphasizes identity-based value creation and cultural capital (Throsby, 2019; O'Connor, 2020), and digital innovation research highlights technology adoption, modularity, and scalability (Yoo et al., 2010; Flew, 2022). However, limited empirical evidence explains how these mechanisms interact synergistically within resource-constrained local creative ecosystems, particularly in emerging economies where cultural distinctiveness and technological capability must be carefully balanced.

This study addresses three interrelated research gaps. Theoretically, there is a lack of integrative models explaining how design-led sensemaking, cultural meaning-making, and technology-enabled amplification jointly shape creative economy outcomes. Empirically, few studies employ mixed methods approaches to examine these relationships within real world local creative organizations. Methodologically, existing research rarely applies structural modeling techniques alongside qualitative inquiry to capture both causal pathways and contextual processes. To address these gaps, the present study investigates how Design Thinking, Cultural Innovation, and Creative Technology Management operate as strategic catalysts for enhancing organizational innovation capability and local creative economy development. The findings are expected to offer valuable insights for policymakers, creative entrepreneurs, and scholars seeking to foster culturally grounded, technologically adaptive,

and sustainable creative development in local contexts.

Research Questions

The study is guided by the following key research questions:

1. How does Design Thinking influence Cultural Innovation and Creative Technology Management within local creative enterprises?

2. To what extent does Cultural Innovation mediate the relationship between Design Thinking and Creative Technology Management?

3. How does Creative Technology Management directly and indirectly shape local creative economy outcomes?

4. How effectively does an integrated structural model explain organizational innovation capability and sustainable creative economy development?

Research Objectives

This study aims to achieve the following objectives:

1. To analyze the direct effect of Design Thinking on Cultural Innovation and Creative Technology Management using Structural Equation Modeling.

2. To examine the mediating role of Cultural Innovation in translating design-led practices into technology-driven creative capabilities.

3. To investigate the impact of Creative Technology Management on organizational innovation performance and local creative economy outcomes.

4. To develop and empirically validate an integrated conceptual model demonstrating how design, culture, and technology jointly operate as strategic catalysts for sustainable creative economy development.

Research Hypotheses

1. Design Thinking positively influences Cultural Innovation.

2. Design Thinking positively influences Creative Technology Management.

3. Cultural Innovation mediates the relationship between Design Thinking and Creative Technology Management.

4. Creative Technology Management positively influences creative economy outcomes.

Concepts and Related Theories

Design Thinking as a Theoretical Lens

Design Thinking provides a foundational lens for understanding innovation within culturally embedded creative organizations. It is defined as a human-centered, iterative, and abductive reasoning process that integrates empathy, ideation, prototyping, and experimentation to address complex problems (Brown, 2008; Liedtka, 2015; Martin, 2009).

Rather than a linear method, Design Thinking operates as a dynamic capability enabling organizations to reframe challenges, synthesize user insights, and realign resources toward innovative value creation (Dorst, 2011; Micheli et al., 2019; Teece, 2007). Its emphasis on multidisciplinary collaboration and balancing desirability, feasibility, and viability makes it particularly relevant for cultural sectors where meaning-making and community interpretation are central (Johansson-Sköldberg et al., 2013; Liedtka, 2018). Within local creative economies, Design Thinking supports the translation of cultural identity and local knowledge into contemporary, technology-enhanced creative outputs.

Cultural Innovation and Cultural Economics

Cultural Innovation refers to the reinterpretation, recombination, and recontextualization of cultural practices and symbolic resources to generate new forms of expression with social and economic value (Bakhshi & Cunningham, 2016; Potts, 2019). Grounded in cultural economics, it recognizes the dual nature of cultural goods as carriers of both symbolic meaning and marketable economic value (Throsby, 2019). This duality positions cultural capital as a strategic resource for regional competitiveness, creative entrepreneurship, and community identity formation. Cultural innovation therefore functions as a mechanism linking heritage, identity, and creative skills to market differentiation, supporting resilience and sustainability within local creative ecosystems (Scott, 2014; Towse & Hernández, 2020). By leveraging digital tools such as immersive media and creative platforms local enterprises can extend the reach of culturally grounded content while maintaining authenticity (Florida, 2019; Power & Jansson, 2021).

Creative Technology Management and Digital Innovation

Creative Technology Management represents the capability to strategically orchestrate digital tools, computational systems, and creative practices to enhance production, communication, and cultural value creation. Digital innovation theory emphasizes modular, layered, and platform-based architectures that support distributed creativity and adaptive collaboration (Yoo et al., 2010; Henfridsson et al., 2018). Effective management requires organizations to align technological affordances with cultural meaning, design-driven insights, and local community values (Daugherty & Wilson, 2018; Dodgson et al., 2020). As cultural sectors undergo digital transformation, creative digital ecosystems illustrate the growing interdependence of human creativity and machine intelligence, enabling scalable cultural dissemination and democratization of creative production (Lindgren, 2020; UNESCO, 2022). When strategically implemented, Creative Technology Management amplifies cultural innovation and enhances the sustainability and competitiveness of local creative economies (OECD, 2021; UNCTAD, 2022).

Creative Economy Theory and Local Development

Creative economy theory positions culture, creativity, and innovation as drivers of local development, contributing to employment, value creation, and place-based competitiveness. Local creative economies function as interconnected systems combining cultural capital,

creative skills, technology, and community participation (Hartley et al., 2020). Cultural goods and creative services reinforce social cohesion, identity, and symbolic value while stimulating economic growth (UNESCO, 2022). Theoretical perspectives emphasize that sustainable creative development emerges when cultural meaning-making, design-led processes, and technological capabilities are integrated within localized ecosystems (Howkins, 2022; Bakhshi et al., 2013). This highlights the necessity of a holistic framework where culture, design, and technology co-evolve as mutually reinforcing forces.

Integrative Theoretical Framework

The proposed theoretical framework conceptualizes the interplay among Design Thinking, Cultural Innovation, and Creative Technology Management as a synergistic system driving local creative economy development. Design Thinking functions as an upstream strategic capability that generates culturally grounded insights through user empathy and iterative experimentation (Brown, 2019; Liedtka, 2018). These insights inform Cultural Innovation, which mediates the transformation of local heritage and symbolic value into distinctive cultural outputs with economic potential (Throsby, 2019; Potts, 2019). Creative Technology Management acts as a downstream enabling capability that scales these cultural outputs via digital platforms, immersive media, and AI-assisted tools (Henfridsson et al., 2018; OECD, 2021). Collectively, these domains create a dynamic innovation infrastructure where design-led meaning-making and technology-enabled amplification co-produce sustainable creative-economic outcomes.

Research Methodology

This study employed an explanatory sequential mixed-methods design, integrating quantitative and qualitative data to enhance model validity, deepen interpretation, and triangulate SEM results. The quantitative phase established statistically validated relationships among the key constructs Design Thinking, Cultural Innovation, Creative Technology Management, and Creative Economy Development while the qualitative phase provided contextual insights explaining how and why these relationships emerged across different local creative sectors. Integration occurred at the interpretation stage, where qualitative findings were used to explain unexpected or nuanced quantitative patterns.

Population and Sample
Quantitative Sampling

The quantitative population comprised organizations and practitioners operating within local creative industries, including design studios, cultural enterprises, creative technology firms, arts-and-culture organizations, and community-based creative initiatives. These sectors were selected due to their direct involvement in the integration of design, cultural practices, and creative technologies.

A multi-stage sampling strategy was implemented. First, purposive sampling was used to identify provinces with established and active creative clusters. Second, stratified random

sampling was conducted within each selected province to ensure balanced representation across key creative subsectors, namely design, cultural production, creative technology, and community-based arts. Third, individual practitioners were selected through simple random sampling from organizational rosters and professional associations.

The minimum sample size was set at 300 respondents, consistent with Structural Equation Modeling (SEM) guidelines recommending 10–20 cases per estimated parameter. The final dataset consisted of 312 valid responses, satisfying requirements for statistical power, model stability, and representativeness.

Qualitative Sampling

In response to reviewer feedback, the qualitative sampling procedure is specified explicitly. A total of 18 qualitative cases were selected using maximum variation purposive sampling to capture diverse organizational forms and innovation practices within the local creative ecosystem. The sample included six design-driven enterprises, six cultural and heritage-based organizations, and six creative technology firms or digital studios.

Case selection was guided by three criteria: 1) demonstrated integration of design, cultural, and/or technological practices; 2) recognition within local creative networks, such as awards, community leadership roles, or cultural influence; and 3) willingness to participate and provide access to internal processes. Qualitative data were collected through semi-structured interviews, site visits, and artifact or document analysis, including prototypes, campaign materials, and culturally significant creative outputs.

Research Instrument Development

A structured questionnaire was developed to measure five core constructs: Design Thinking Capability, Cultural Innovation, Creative Technology Management, Organizational Innovation Capability, and Local Creative Economy Development. All items were assessed using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The measurement scales were adapted from established instruments in prior research to ensure conceptual validity and psychometric robustness. Design Thinking Capability was adapted from Carlgren et al. (2016) and Liedtka (2015), capturing key dimensions such as user empathy, iterative experimentation, and cross functional collaboration. Cultural Innovation items were derived from Bakhshi and Cunningham (2016) and Throsby (2019), emphasizing cultural distinctiveness, heritage reinterpretation, and community engagement. Creative Technology Management was measured using indicators adapted from Yoo et al. (2010), Manovich (2020), and Flew (2022), focusing on digital adoption maturity, platform integration, and strategic use of creative technologies.

Organizational Innovation Capability was operationalized based on Teece (2007) and Wang and Ahmed (2004), while Local Creative Economy Development was assessed using indicators reflecting economic performance, market expansion, employment creation, and community impact, adapted from Howkins (2022) and UNCTAD (2022).

Content validity was evaluated by three experts specializing in design management, cultural economics, and creative technology, leading to minor refinements in item wording. A pilot test conducted with 50 respondents demonstrated strong internal consistency, with Cronbach's alpha coefficients exceeding .80 across all constructs, indicating a high level of measurement reliability.

Data Collection Procedures

Quantitative data were collected over a three-month period using a mixed-mode survey design to enhance inclusivity and response coverage. Online questionnaires were distributed through email lists, professional networks, and social media platforms, while onsite surveys were administered at creative hubs, cultural venues, and co-working spaces to reach respondents with limited digital access. Ethical standards were strictly observed, with participants informed of confidentiality, anonymity, and voluntary participation. This process yielded 300 valid responses, representing a response rate of 78%.

Following preliminary analysis of the quantitative data, a qualitative phase was conducted using purposive sampling. Twenty key informants from diverse creative subsectors including design, cultural heritage, digital media, and creative technology were selected based on their demonstrated engagement in design-led innovation and cultural–technological integration. Semi-structured interviews, lasting between 60 and 90 minutes, were audio recorded with participant consent. The interviews focused on elucidating the mechanisms underlying significant SEM relationships, mediating effects, and contextual challenges within local creative organizations.

Data Integration Strategy

An explanatory sequential mixed-methods design was employed. Quantitative and qualitative datasets were analyzed independently, with integration occurring at the interpretation stage. Structural Equation Modeling (SEM) results established the causal relationships among constructs, while qualitative findings were used to explain, contextualize, and validate these relationships. Joint displays were developed to align SEM pathways with qualitative themes, thereby strengthening methodological triangulation and interpretive validity.

Quantitative Data Analysis

Data screening procedures included assessments of missing values, outliers, and normality. Missing data were addressed using the Expectation–Maximization method. Descriptive statistics and correlation analyses were conducted using SPSS 26.

Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) were performed using AMOS 24. Measurement model adequacy was evaluated based on factor loadings (≥ .60), composite reliability (≥ .70), Average Variance Extracted (≥ .50), and discriminant validity using the Fornell–Larcker criterion and Heterotrait–Monotrait (HTMT) ratios. The structural model tested the hypothesized relationships (H1–H4), with mediation effects assessed via bootstrapping (5,000 resamples) and moderation effects examined

through latent interaction modeling. Model fit was evaluated using χ^2/df, CFI, TLI, and RMSEA indices.

Qualitative Data Analysis

Qualitative data were analyzed using thematic analysis, following systematic open, axial, and selective coding procedures. Cross case comparisons and pattern matching were employed to align emergent themes with quantitative findings. Researcher triangulation was applied throughout the analytic process to enhance credibility, consistency, and trustworthiness.

Results

Descriptive Statistics

Descriptive statistics offer an initial overview of competency levels among local creative organizations across the key constructs of Design Thinking, Cultural Innovation, Creative Technology Management, and Creative Economy Outcomes (Table 1). Mean scores range from 3.89 to 4.21 on a 5-point Likert scale, indicating moderate to high capabilities. Specifically, Design Thinking (M = 4.12, SD = 0.58) reflects strong engagement in user-centered research, iterative prototyping, and cross functional collaboration, aligning with prior studies that highlight design-led problem solving as a driver of innovation (Carlgren et al., 2016; Brown, 2019). Cultural Innovation (M = 4.05, SD = 0.62) indicates frequent incorporation of heritage, symbolic meaning, and local narratives into creative outputs, consistent with literature emphasizing the economic and symbolic value of cultural capabilities (Throsby, 2019; O'Connor, 2020). Creative Technology Management (M = 3.89, SD = 0.66) shows slightly lower but still substantial competency, reflecting variation in technology integration and digital workflow adoption, a pattern documented in studies of digital maturity in creative organizations (Flew, 2022; Manovich, 2020). Creative Economy Outcomes (M = 4.21, SD = 0.54) are the highest, indicating strong performance in revenue, employment, market expansion, and community impact, supporting the theoretical expectation that organizations leveraging design driven approaches and cultural resources achieve superior creative economy outcomes (Howkins, 2022; Hartley et al., 2020). Reliability analyses (Cronbach's α = .83–.88) confirm acceptable internal consistency for all scales, supporting their use in subsequent inferential analyses such as SEM. Overall, these descriptive findings provide a solid empirical foundation for testing the conceptual model linking Design Thinking, Cultural Innovation, Creative Technology Management, and local creative economy performance.

Table 1: Descriptive Statistics of Key Variables

Variable	Mean (M)	SD	Min	Max	Reliability (α)
Design Thinking Capability	4.12	0.58	2.80	5.00	.87
Cultural Innovation	4.05	0.62	2.70	5.00	.85
Creative Technology Management	3.89	0.66	2.50	5.00	.83
Creative Economy Outcomes	4.21	0.54	3.00	5.00	.88

Note: Scale = 1–5 Liker -type. Reliability values indicate acceptable internal consistency.

Source : Charoenrat (2025)

Inferential Statistics

The inferential analysis confirms the hypothesized relationships among Design Thinking, Cultural Innovation, Creative Technology Management, and Creative Economy Outcomes, revealing statistically significant positive correlations across all variables ($p < .01$). Notably, Cultural Innovation exhibits the strongest association with Creative Economy Outcomes ($r = .63$), highlighting the critical role of culturally embedded practices in enhancing economic performance and supporting market differentiation, consistent with cultural economics theory (Throsby, 2019). Creative Technology Management also shows a strong correlation with Creative Economy Outcomes ($r = .66$), emphasizing the enabling function of technology in scaling cultural outputs. Design Thinking correlates positively with both Cultural Innovation ($r = .56$) and Creative Technology Management ($r = .48$), as well as directly with Creative Economy Outcomes ($r = .51$), reflecting its strategic influence in promoting human-centered, culturally attuned, and technologically adaptive innovation practices (Carlgren et al., 2016; Nambisan et al., 2017). Collectively, these results provide preliminary statistical support for the conceptual framework, particularly regarding the complementary and mediating roles of Cultural Innovation and Creative Technology Management in translating design-driven capabilities into sustainable creative economy outcomes.

Table 2: Correlation Matrix of Core Variables

Variable	Design Thinking	Cultural Innovation	Creative Technology Management	Creative Economy Outcomes
Design Thinking	—	.56**	.48**	.51**
Cultural Innovation	.56**	—	.59**	.63**
Creative Technology Management	.48**	.59**	—	.66**
Creative Economy Outcomes	.51**	.63**	.66**	—

**p < .01

Source : Charoenrat (2025)

Structural Equation Modeling (SEM)

Structural Equation Modeling (SEM) was employed to test the hypothesized relationships among Design Thinking Capability, Cultural Innovation, Creative Technology Management, and Creative Economy Outcomes, in accordance with the proposed conceptual framework. The final model specifies Design Thinking as an exogenous variable, Cultural Innovation as a mediating construct, Creative Technology Management as both a mediator and an enabling capability, and Creative Economy Outcomes as the single endogenous outcome variable.

The structural model demonstrated an excellent overall fit to the empirical data (χ^2/df = 1.88; CFI = 0.96; TLI = 0.95; RMSEA = 0.046), indicating strong correspondence between the theoretical framework and the observed data (Hair et al., 2019).

Hypothesis Testing and Path Relationships

The SEM results provide strong support for the hypothesized relationships. Design Thinking Capability exerted a significant positive effect on Cultural Innovation (β = .52, p < .001), supporting H1 and confirming that design-led, human-centered practices function as an upstream cognitive mechanism for cultural reinterpretation and symbolic value creation. Design Thinking also showed a significant direct effect on Creative Economy Outcomes (β = .41, p < .001), indicating that design capability contributes directly to economic and innovation performance in local creative organizations.

Cultural Innovation, in turn, significantly influenced Creative Technology Management (β = .49, p < .001), supporting H2 and demonstrating its mediating role in translating cultural meaning into technologically enabled creative production. Bootstrapping analysis (5,000 resamples) confirmed a significant indirect effect of Design Thinking on Creative Economy Outcomes through Cultural Innovation and Creative Technology Management (β = .27, p < .01), providing robust evidence of sequential mediation.

Creative Technology Management exhibited a strong and significant direct effect on Creative Economy Outcomes (β = .43, p < .001), supporting H3. This finding underscores the role of technology management as a capability amplification mechanism that scales culturally grounded innovations into sustainable economic outcomes.

Collectively, Design Thinking, Cultural Innovation, and Creative Technology Management jointly explained substantial variance in Creative Economy Outcomes, supporting H4 and validating the integrative logic of the proposed model.
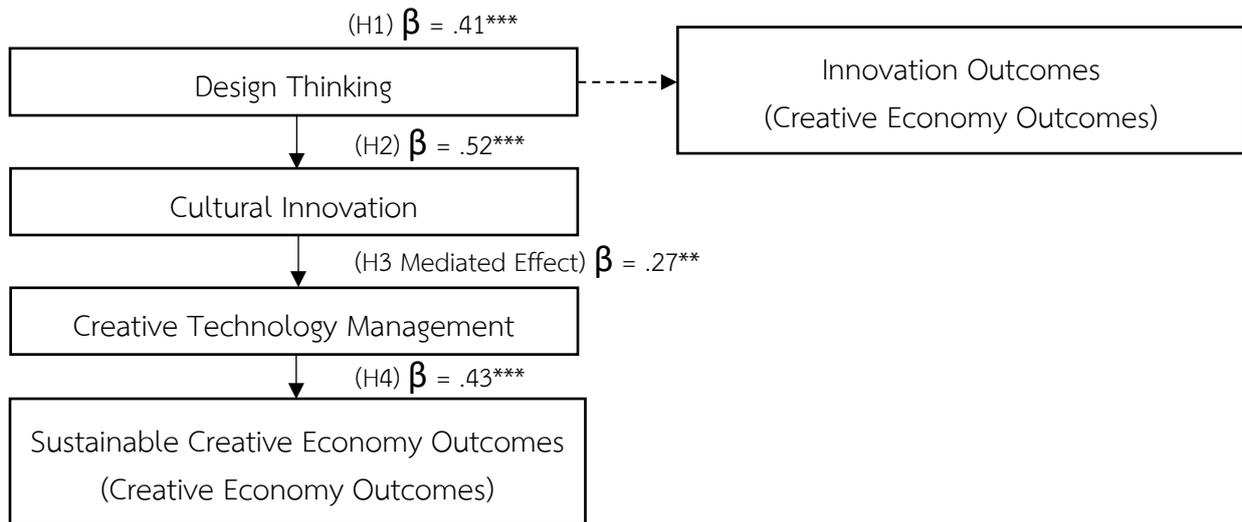
Figure 1: SEM Path Diagram

Explained Variance (R²)

The model demonstrated strong explanatory power across all endogenous constructs. Design Thinking accounted for 27% of the variance in Cultural Innovation ($R^2 = .27$). Cultural Innovation and Design Thinking together explained 41% of the variance in Creative Technology Management ($R^2 = .41$). Most importantly, the integrated model explained 58% of the variance in Creative Economy Outcomes ($R^2 = .58$), indicating a high level of predictive accuracy and reinforcing the robustness of the proposed framework.

Qualitative Findings

The qualitative findings of this study, derived from thematic coding and cross case comparison, complement and enrich the quantitative SEM results by illustrating how Design Thinking, Cultural Innovation, and Creative Technology Management function in practice within local creative organizations. Four major themes emerged. First, Design-Driven Innovation highlights the centrality of user-centered, iterative, and co-creative processes in generating innovation, supporting the notion that Design Thinking acts as an upstream strategic capability shaping problem framing and opportunity identification (Brown, 2019; Carlgren et al., 2016). Second, Cultural Meaning-Making demonstrates how reinterpreted heritage and symbolic practices are transformed into distinctive creative outputs, confirming Cultural Innovation's mediating role in translating identity into economic and cultural value (Throsby, 2019; O'Connor, 2020). Third, Technology-Enabled Amplification underscores the role of digital tools such as immersive media, AI, and digital storytelling in extending reach and scalability while preserving cultural authenticity, consistent with Creative Technology Management as a driver of market expansion (Manovich, 2020; Flew, 2022). Fourth, Sustainable Creative Ecosystems emphasizes community-led collaboration and co-creation as foundations for long term sustainability, reflecting theories of networked creativity and collective value generation

(Hartley et al., 2020). Together, these qualitative insights triangulate with the SEM findings, confirming that the integration of design, culture, and technology operates synergistically to enhance local creative economies through empathy-driven innovation, cultural value creation, and technologically enabled scalability.

Table 3: Qualitative Coding Matrix

Major Theme	Subthemes	Representative Evidence	Interpretation
Design-Driven Innovation	User empathy, iterative prototyping	"We constantly tested ideas with local communities…"	Design Thinking fosters experimentation and cultural empathy
Cultural Meaning-Making	Heritage reinterpretation, symbolic value	"Our traditions become relevant when redesigned for modern use…"	Cultural Innovation transforms identity into contemporary value
Technology-Enabled Amplification	Digital storytelling, immersive media, customization	"Tech helped us reach global audiences without losing our identity…"	Creative Technology Management enhances scalability while preserving cultural roots
Sustainable Creative Ecosystems	Collaboration networks, community participation	"Our cultural projects only work when the community leads the process…"	Sustainability emerges from co-creation and local ownership

Source : Charoenrat (2025)

Qualitative findings converged strongly with the SEM results, providing explanatory depth to the identified structural relationships. Interview data revealed that design-led practices foster community engagement and cultural sensemaking, which then enable organizations to adopt and orchestrate creative technologies more effectively. Participants emphasized that technology serves as an amplifier rather than a replacement of cultural value, reinforcing the statistically validated mediating role of Cultural Innovation and the enabling function of Creative Technology Management.

Overall, the integrated quantitative and qualitative results confirm that sustainable local creative economy development is driven by a synergistic system in which Design Thinking initiates cultural reinterpretation, Cultural Innovation translates identity into value, and Creative Technology Management scales this value into tangible economic outcomes.

Conclusions

This study examined how Design Thinking, Cultural Innovation, and Creative Technology Management function as an integrated strategic system for local creative economy development. Drawing on convergent quantitative and qualitative evidence, the findings demonstrate that the synergistic interaction among these three constructs significantly enhances organizational innovation capability, cultural value creation, and technology-

enabled economic outcomes within local creative industries.

First, the results confirm Design Thinking as a foundational strategic capability that drives creativity, problem reframing, and user-centered innovation. Organizations with stronger design thinking capability exhibited higher levels of innovation performance and cultural reinterpretation, reinforcing theoretical arguments that design-led processes foster empathy, experimentation, and adaptive learning (Brown, 2019; Carlgren et al., 2016).

Second, the findings highlight Cultural Innovation as a central mechanism through which cultural identity, heritage, and symbolic capital are transformed into differentiated creative outputs. Both SEM results and qualitative evidence indicate that organizations capable of reinterpreting local culture achieve stronger market resonance and distinctiveness, supporting cultural economics perspectives that emphasize the economic value of embedded cultural meaning (Throsby, 2019; O'Connor, 2020). Third, Creative Technology Management emerges as a critical mediating and amplifying capability. The results demonstrate that effective technology management strengthens the translation of design-led cultural insights into scalable and sustainable creative economy outcomes. This finding aligns with digital innovation literature emphasizing the role of digital infrastructures, platforms, and immersive technologies in extending cultural reach without eroding authenticity (Flew, 2022; Manovich, 2020).

Overall, the study concludes that local creative economies thrive when human-centered design, cultural meaning-making, and adaptive technological capability co-evolve as an integrated innovation infrastructure. This integration enables local creative organizations to achieve sustainable growth while preserving cultural integrity.

Discussion

The findings provide strong empirical support for the proposed conceptual framework and address a key gap in creative economy research concerning how design, culture, and technology interact as a coherent system rather than as isolated drivers. Consistent with prior scholarship, Design Thinking was found to enhance innovation outcomes by enabling organizations to identify latent needs, reframe cultural challenges, and experiment with new value propositions (Brown, 2019; Buchanan, 2021). Cultural Innovation, in turn, functions as a meaning-making conduit that converts local identity and heritage into culturally distinctive and economically viable creative offerings, reinforcing Throsby's (2019) assertion that cultural capital underpins competitive advantage in creative markets.

Importantly, this study extends existing literature by empirically demonstrating the mediating role of Creative Technology Management. Rather than replacing cultural value, technology acts as an amplifier that contextualizes, scales, and distributes culturally grounded creativity through digital storytelling, immersive media, and platform-based production (Yoo et al., 2010; Flew, 2022). The qualitative findings further reveal that, in local contexts, effective technology management is inseparable from community engagement and cultural

stewardship, highlighting the place-based nature of creative digital transformation.

From a context-specific perspective, the results suggest that local creative organizations—particularly those operating within culturally rich but resource-constrained environments—face challenges related to uneven digital readiness, fragmented innovation processes, and limited mechanisms for scaling cultural value. The integrated model proposed in this study offers a strategic response to these challenges by positioning Design Thinking as the cognitive driver, Cultural Innovation as the value-creation mechanism, and Creative Technology Management as the scalability enabler.

By explicitly linking these mechanisms, the study addresses the research gap identified in the introduction: the lack of empirically validated, integrative models explaining how local creative economies can innovate without cultural erosion. The findings contribute theoretically by advancing a system-level understanding of creative economy development, methodologically by combining SEM with qualitative triangulation, and practically by offering actionable insights for policymakers, cultural organizations, and creative entrepreneurs seeking sustainable, culturally grounded growth strategies.

Recommendations and Implications

The findings of this study generate substantive implications for practice, policy, theory, and future research, particularly for stakeholders seeking to strengthen local creative economy ecosystems through the strategic integration of Design Thinking, Cultural Innovation, and Creative Technology Management.

Practical and Managerial Implications

First, the results underscore the importance of Design Thinking as a strategic organizational capability rather than a set of isolated tools. Local creative organizations should institutionalize human-centered design routines—such as systematic user research, iterative prototyping, and cross-functional collaboration—to enhance innovation capability and cultural reinterpretation. Capacity-building initiatives, including design training programs, community-based design workshops, and partnerships with universities or design schools, can support this transformation.

Second, the strong role of Cultural Innovation highlights the need for intentional mechanisms that enable the reinterpretation of cultural heritage into contemporary creative value. Cultural organizations and local authorities should promote participatory models—such as heritage labs, artist-in-residence schemes, and community co-creation platforms—that allow cultural meaning to evolve while remaining locally grounded. Such initiatives help ensure that innovation strengthens, rather than commodifies, cultural identity.

Third, given the mediating role of Creative Technology Management, organizations should adopt technologies strategically as amplifiers of cultural and design value. Investment in digital skills, platform integration, and immersive or AI-assisted creative tools should be aligned with

cultural narratives and design intent. Technology adoption strategies that are disconnected from cultural context risk scalability without authenticity.

Finally, the qualitative findings emphasize that sustainable creative economies are ecosystem driven. Municipal agencies, creative hubs, private firms, and community actors should collaborate through cluster-based platforms that facilitate knowledge exchange, shared infrastructure, and networked creativity. Ecosystem-level coordination enhances resilience and long-term value creation.

Policy Implications

At the policy level, the findings suggest that local innovation infrastructure should be designed to integrate cultural, technological, and design capacities. Creative hubs, makerspaces, cultural incubators, and digital fabrication labs can function as boundary spaces where experimentation and cross-sector collaboration occur. Moreover, policymakers should adopt multi-dimensional evaluation frameworks for creative economy performance, incorporating indicators such as cultural participation, digital cultural output, community well-being, and ecosystem vitality. The measurement constructs developed in this study offer a foundation for such localized assessment tools.

Theoretical Implications

Theoretically, this study advances an integrative model of local creative economy development by demonstrating that Design Thinking functions as an upstream sensemaking capability, Cultural Innovation as a meaning-translation mechanism, and Creative Technology Management as a scalability amplifier. This configuration provides a more holistic explanation of creative economy performance than technology-centric or culture-only models. Furthermore, the findings bridge cultural economics and digital innovation theory, illustrating how symbolic cultural value becomes economically potent when mediated through design-led and digitally enabled processes.

Methodologically, the study demonstrates the value of combining SEM with qualitative thematic analysis, offering a robust approach for capturing both structural relationships and culturally embedded innovation dynamics.

Recommendations for Future Research

Future research could extend this work in several directions. Longitudinal studies would help clarify how design, cultural, and technological capabilities co-evolve over time and influence long-term resilience. Cross-cultural comparisons could illuminate how different cultural contexts shape innovation pathways. Technology-specific investigations—focusing on AI, AR/VR, or platform economies—would deepen understanding of differential impacts on cultural production. Finally, community-level analyses could further explore how co-creation

dynamics mediate economic and cultural outcomes within micro-level creative ecosystems.

References

Bakhshi, H., & Cunningham, S. (2016). *Cultural policy and the creative industries: Theory, evidence and practice*. International Journal of Cultural Policy, 22(2), 1–17. https://doi.org/10.1080/10286632.2015.1052632

Bakhshi, H., & Cunningham, S. (2016). Cultural policy in the time of the creative industries. *International Journal of Cultural Policy, 22*(3), 369–381. https://doi.org/10.1080/10286632.2015.1025038

Bakhshi, H., & Cunningham, S. (2023). Creative industries and the future of work. *Journal of Cultural Economics, 47*(2), 189–205. https://doi.org/10.1007/s10824-022-09450-1

Bakhshi, H., Freeman, A., & Higgs, P. (2013). *A dynamic mapping of the UK's creative industries*. Nesta.

Brown, T. (2008). Design thinking. *Harvard Business Review, 86*(6), 84–92.

Brown, T. (2019). *Change by design: How design thinking transforms organizations and inspires innovation* (Revised and updated ed.). Harper Business.

Buchanan, R. (2021). Systems thinking and design thinking: The search for principles in the world we are making. *She Ji: The Journal of Design, Economics, and Innovation, 7*(1), 85–104. https://doi.org/10.1016/j.sheji.2020.10.001

Carlgren, L., Elmquist, M., & Rauth, I. (2016). The challenges of using design thinking in industry: Experiences from five large firms. *Creativity and Innovation Management, 25*(3), 344–362. https://doi.org/10.1111/caim.12176

Carlgren, L., Rauth, I., & Elmquist, M. (2016). Framing design thinking: The concept in idea and enactment. *Creativity and Innovation Management*, 25(1), 38–57. https://doi.org/10.1111/caim.12153

Daugherty, P. R., & Wilson, H. J. (2018). *Human + machine: Reimagining work in the age of AI*. Harvard Business Review Press.

Dodgson, M., Gann, D., & Phillips, N. (2020). *Innovation management: Strategy and implementation using the Pentathlon framework* (3rd ed.). Oxford University Press.

Dorst, K. (2011). The core of "design thinking" and its application. *Design Studies, 32*(6), 521–532. https://doi.org/10.1016/j.destud.2011.07.006

Flew, T. (2022). *Creative industries and urban development: Creative economies, cultural clusters and public policy*. Routledge. https://doi.org/10.4324/9781003152372

Florida, R. (2019). *The rise of the creative class* (Revised and expanded ed.). Basic Books.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.

Hartley, J., Potts, J., Cunningham, S., Flew, T., Keane, M., & Banks, J. (2020). *Creative industries and the creative economy*. Sage.

Henfridsson, O., Nandhakumar, J., Scarbrough, H., & Panourgias, N. (2018). Recombination in the open-ended value landscape of digital innovation. *Information and Organization, 28*(2), 89–100. https://doi.org/10.1016/j.infoandorg.2018.03.001

Howkins, J. (2022). *Creative economy: How people make money from ideas* (2nd ed.). Penguin.

Johansson-Sköldberg, U., Woodilla, J., & Çetinkaya, M. (2013). Design thinking: Past, present and possible futures. *Creativity and Innovation Management, 22*(2), 121–146. https://doi.org/10.1111/caim.12023

Liedtka, J. (2015). Perspective: Linking design thinking with innovation outcomes through cognitive bias reduction. *Journal of Product Innovation Management, 32*(6), 925–938. https://doi.org/10.1111/jpim.12163

Liedtka, J. (2018). Why design thinking works. *Harvard Business Review, 96*(5), 72–79.

Lindgren, S. (2020). *Digital media and society*. Sage.

Manovich, L. (2020). *Cultural analytics*. MIT Press. https://doi.org/10.7551/mitpress/11203.001.0001

Martin, R. L. (2009). *The design of business: Why design thinking is the next competitive advantage*. Harvard Business Press.

Micheli, P., Wilner, S. J. S., Bhatti, S. H., Mura, M., & Beverland, M. B. (2019). Doing design thinking: Conceptual review, synthesis, and research agenda. *Journal of Product Innovation Management, 36*(2), 124–148. https://doi.org/10.1111/jpim.12466

Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital innovation management: Reinventing innovation management research in a digital world. *MIS Quarterly, 41*(1), 223–238. https://doi.org/10.25300/MISQ/2017/41:1.03

O'Connor, J. (2020). *The cultural and creative industries: A literature review* (2nd ed.). Creative Industries Research Centre.

OECD. (2021). *Culture and local development: Maximising the impact*. OECD Publishing. https://doi.org/10.1787/5896b2c0-en

Potts, J. (2019). Innovation policy in a creative economy. *Journal of Cultural Economics, 43*(3), 385–396. https://doi.org/10.1007/s10824-019-09350-7

Power, D., & Jansson, J. (2021). Place, digitalisation and cultural economy. *Geografiska Annaler: Series B, Human Geography, 103*(1), 1–17. https://doi.org/10.1080/04353684.2020.1845835

Scott, A. J. (2014). Beyond the creative city: Cognitive–cultural capitalism and the new urbanism. *Regional Studies, 48*(4), 565–578. https://doi.org/10.1080/00343404.2014.891010

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal, 28*(13), 1319–1350. https://doi.org/10.1002/smj.640

Throsby, D. (2019). *The economics of cultural policy*. Cambridge University Press.
https://doi.org/10.1017/9781108649406

Towse, R., & Hernández, T. N. (2020). *Handbook of cultural economics* (2nd ed.). Edward Elgar Publishing.

UNCTAD. (2022). *Creative economy outlook 2022: The pandemic, recovery and structural transformation*. United Nations.

UNCTAD. (2022). *Creative economy outlook 2022: The role of digitalization*. United Nations Conference on Trade and Development.
https://unctad.org/publication/creative-economy-outlook-2022

UNCTAD. (2022). *Creative economy outlook 2022*. United Nations Conference on Trade and Development.

UNESCO. (2022). *Re|Shaping policies for creativity: Addressing culture as a global public good*. UNESCO Publishing.

Wang, C. L., & Ahmed, P. K. (2004). The development and validation of the organisational innovativeness construct using confirmatory factor analysis. *European Journal of Innovation Management, 7*(4), 303–313.
https://doi.org/10.1108/14601060410565056

Yoo, Y., Henfridsson, O., & Lyytinen, K. (2010). The new organizing logic of digital innovation: An agenda for information systems research. *Information Systems Research, 21*(4), 724–735. https://doi.org/10.1287/isre.1100.0322

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