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RESEARCH

Rethinking financial sustainability for cultural and creative industries in the AI age: a theoretical model

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Acknowledging that the Cultural and Creative Industries (CCIs) face enormous difficulties such as lack of physical substances for assets, volatile demand, and fragmented financing mechanisms, it is important to note that they have a central role in the global economy as they promote innovation, employment, and cultural diversity. The artificial intelligence (AI) upswing and digitalization modify value chains in a great way by disrupting traditional creative processes, revenue models, and regulatory frameworks. This paper aims at developing a theoretical model for financial sustainability as far as CCIs are concerned by integrating five key dimensions: (i) financial strength, (ii) digitalization, (iii) AI integration, (iv) governance quality, and (v) market adaptability. Our multiplicative resilience function demonstrates that deficiencies in any of these dimensions significantly increase sectoral fragility, reinforcing the need for a balanced and holistic approach. Using a systematic review of 53 academic and institutional sources, we identify emerging financial strategies—such as hybrid public-private financing, crowdfunding, and blockchain-based models—and assess their potential in mitigating CCIs' economic vulnerabilities. Our findings highlight that AI-driven transformation can be an asset or a liability, depending on the strength of governance frameworks regulating intellectual property rights, platform monopolization, and ethical AI adoption. The proposed model provides a diagnostic and strategic tool for policymakers, investors, and industry stakeholders, offering a framework to enhance CCIs' resilience in an era of rapid technological evolution.

Keywords: cultural and creative industries (CCIs), financial sustainability, digital transformation, AI integration, governance and intellectual property, hybrid financing

Introduction

The Cultural and Creative Industries (CCIs) have emerged as a surprisingly vibrant heartbeat of the global economy. From the bustling recording studios of Seoul to the indie game design workshops in Berlin, these industries are more than just economic engines—they're cultural storytellers generating remarkable added value while championing innovation and social connection (1).

Yet, there's an intriguing fragility beneath the surface. These industries dance on a tightrope of complexity. The inspiration with regard to their reliance on intangible assets prompts them to be vulnerable. The observed vulnerability includes non-standard employment, a swing in terms of demand, and a collapse with regard to financing sources that create an unsteady ecosystem (2, 3). Think of a brilliant graphic designer whose entire portfolio exists in digital files or a musician who depends on streaming algorithms for income.

Another complication observed in the digital revolution, is the upswing of artificial intelligence (AI) and one can conclude by highlighting that AI is not just a tool but a

firebrand that radically transforms the way in which cultural content is created, distributed, and monetized. From this, digital platforms are changing value chains in radical ways (4, 5). For example, it is the case with the production of music, where AI easily generates an entire piece of music, and also digital art platforms, where algorithms suggest design modifications instantaneously.

From these changes, one question seems fundamental: how can cultural industries in this day and age of algorithmic creativity and volatile market conditions maintain their original artistic soul in order to build financial resilience? In as much as the challenge is seen at an economic level, it is also about maintaining the ingenuity of humans in a progressive, automated world.

This paper proposes an integrated theoretical model of financial sustainability for CCIs across five interdependent dimensions—financing, digital transformation, AI integration with governance, and market adaptability. It is guided by the question: how can cultural industries, in an age of algorithmic creativity and volatile markets, preserve their artistic soul while building financial resilience? Our core contribution is a multiplicative resilience function ($\Re$) that formalizes these interdependencies: weakness in any single component disproportionately depresses overall resilience, thereby offering a diagnostic basis for prioritizing interventions. The intended audience comprises policymakers, investors, and sector practitioners seeking actionable guidance to strengthen resilience in practice.

Literature review

About creative industries and economic impact

The financial resilience of CCIs stands to be a complex puzzle that does not limit itself just at the level of technological adaptation. These industries prevail in a fascinating liminal space, as they are in constant negotiation between two diametrical or contrary universes: the ruthless marketplace where profit prevails and the noble realm of cultural preservation where societal value trumps economic metrics (6, 7).

When you travel, for instance, into a small independent film studio in Buenos Aires or a music collective in Senegal, you realize that they subsist not with mere focus on generating money but with the aim of maintaining cultural narratives that may in some way be restricted by global corporate narratives. The traditional financing models that were developed in bygone economic eras struggle to maintain this dynamic landscape. In as much as European creators gain from structures that give strong support like Creative Europe, creators in Africa and Latin America are often guided along through a false financial landscape marked by institutional irregularity and limited resources (World Bank Group) (8, 9).

Also, the digital revolution has made things more complex, as it is perceptible with massive technology platforms, which are not just intermediaries but active value extractors. For example, visualize an indie musician whose streaming revenues are a fraction of what platform algorithms generate; you will realize that the digital ecosystems are quietly rewriting economic power dynamics by creating increasingly stark disparities between creators and tech giants (10).

Artificial intelligence is perceived at the same time as an impending supporter and as a potential disruptor; i.e., on one hand, AI offers unprecedented tools for content creation and personalization, democratizing production processes, and on the other hand, the same AI fundamentally challenges traditional concepts of intellectual property and compensation. From this, one can say that a digital artist might now compete with AI-generated artwork, while a musician could find his or her unique style algorithmically reproduced (11, 12).

As a result, this nuanced landscape requires a significant change based on the manner in which we conceptualize, support, and value creative work in a changing algorithmic world.

Representation of integrated model for financial resilience

In the era of AI and digitalization, this article aims at proposing a new theory of financial resilience as far as CCIs are concerned. The article highlights that the vulnerability of CCIs can only be understood by integrating multiple interdependent dimensions such as (i) the diversity and adequacy of financing sources, (ii) the degree of digital transformation, (iii) the integration of AI into distribution and creative processes, (iv) the robustness of institutional and regulatory frameworks, and (v) the sector's adaptability to market dynamics. The analytical model reveals the complex choreography of financial resilience by presenting a delicate dance where five critical dimensions interact not just additively, but multiplicatively. Consider it to be an ecosystem where each element doesn't just bring their contribution but fundamentally transforms the entire capability of the systems. The main hypothesis is that a weakness in any of these areas leads to systemic fragility, even if the other factors remain strong.

Methodology

In order to develop this theory, a systematic literature review encompassing 53 studies published between 2008 and 2024, drawn from peer-reviewed journal articles, institutional reports, and specialized monographs, was consulted. Selected works that examine the economic models, governance structures, and financing strategies of CCIs across different geographical contexts, with a particular focus on the transformations induced by digitalization and AI permit

us to set the pace for our analysis. The analysis was structured around five thematic axes: the economic and organizational characteristics of CCIs, financing models and public-private hybridization, the impact of digitalization and AI on value chains, the role of public policies and regulations, and comparative dynamics across regions. Our research synthesizes key perspectives with the aim to reveal the strategic levers for financial resilience in creative industries. Through mapping these critical dimensions, we develop an analytical framework that diagnoses financial vulnerabilities and gives a route to sustainable economic adaptation.

This approach opens new avenues for policymakers, investors, and industry professionals, providing a rigorous and actionable framework to design policies and strategies that meet the challenges of the 21st century.

With this contribution, we aim not only to enrich academic debates on the economics of CCIs but also to provide a robust analytical tool for practitioners and institutions working to sustain these essential industries. More than just a diagnostic, this article aspires to lay the foundations of a new paradigm: that of a resilient cultural economy, where innovation and regulation are harmonized to ensure the inclusive and sustainable development of CCIs in the era of AI.

Results

Analytical foundations and theoretical perspective

The financial fragility of CCIs in the era of AI stems from an interplay of economic, cultural, and technological factors. Below is a condensed conceptual and theoretical framework that illuminates these dynamics, grounded in leading academic research and key institutional reports.

Specific economic and organizational features of CCIs

Risk and trust

Banks et al. (2) emphasize the omnipresence of risk in CCIs, linked to fluctuating demand, precarious funding, and limited institutional safeguards. In such an uncertain environment, trust-based relationships—often merging the professional and personal spheres—become essential mechanisms for resilience (2).

Precarity, informality, and path dependence

Bouffartigue and Busso (13) shed light on how certain forms of precarious or informal cultural work are neither linear nor irreversible, as workers sometimes organize collective responses. In many developing contexts, informal employment can exceed 80%, constraining CCIs' formal growth (14). This dynamic is also explained by path-dependent legacies (3), where past institutional decisions shape current structures, making systemic change difficult.

Funding models: the public-private continuum

Subvention versus market logics

By nature, CCIs lie at the crossroads of public policy (justified by their cultural and societal value) and market imperatives (6, 7). Hence, financial support can vary significantly:

- **Europe:** A strong public commitment (e.g., Creative Europe) to maintain diversity.
- **United States**: Private investment and commercial viability drive production, often concentrating power within large technology or media conglomerates.
- **Africa:** A more fragile balance, with limited public funding and relatively modest private inflows, though emerging initiatives highlight strong creative potential (8).

Public-private partnerships (PPPs)

PPPs offer an avenue to pool funding and expertise but require transparent governance and aligned objectives (15, 16). In contexts where regulatory frameworks are still evolving (e.g., parts of Africa), PPPs may face obstacles stemming from weak institutions or entrenched informality (8).

AI as a structural disruptor of CCIs

Platform capitalism and cultural value extraction

With the rise of AI, CCIs increasingly shift towards **platform capitalism** (5), as major digital players leverage algorithms to curate, produce, and distribute cultural content. This transformation can undermine certain creative roles and redistribute financial gains primarily to large tech platforms (10, 12).

Legal uncertainties and compensation

AI challenges traditional frameworks of authorship, raising issues around ownership and fair remuneration for works created or assisted by algorithms (11). Creators risk losing income if legislation does not keep pace with technological change, pointing to an urgent need for refined legal and policy instruments (12).

Financial vulnerabilities and resilience strategies

The COVID-19 catalyst

The pandemic exposed CCIs' structural fragility, especially in live-performance sectors, while accelerating digital uptake in areas such as gaming or online streaming (17, 18).

Towards inclusive governance and funding

Policymakers and industry stakeholders are exploring various mitigation measures:

- **Stronger regulation of AI** to protect cultural diversity and safeguard creators' interests (11).
- **Hybrid financing tools**, including public-private mechanisms, microfinance, and insurance schemes tailored to the creative sector (19).
- **Capacity-building and improved connectivity**, vital especially in contexts where informal activity predominates (20).

Thematic comparative analysis

The CCIs have gained increasing recognition as crucial drivers of economic and social value worldwide. At the same time, their inherently intangible assets, fluctuating demand, and fragmented structures render them chronically vulnerable. Recent scholarly and institutional work—from global studies (1) to regional case analyses (9, 21)—has underscored the need for innovative approaches that combine financial, digital, and institutional strategies. These insights form the basis for the theory we are developing, which aims to capture how various interdependent factors contribute to—or undermine—the overall resilience of CCIs

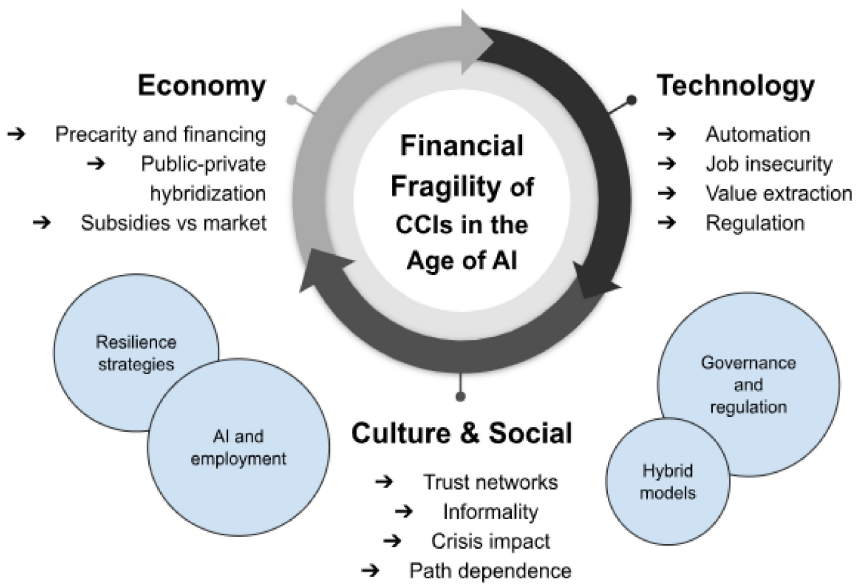

FIGURE 1 | Financial fragility of CCIs in the age of AI. Source: Authors.

TABLE 1 | Summary of key findings on characteristics.

References	Geographic area	Key point	Distinctive keyword
Lhermitte et al. (1)	Global	Economic importance of CCIs and under-financing	Global evaluation
Flew and Cunningham (22)	Global	Redefinition of "creative industries" in the digital era	New economic models
Bakhshi and Throsby (23)	Anglo-Saxon (book)	eBooks: complementarity or cannibalization of print sales	Digitalization of the book
UNESCO and UNDP (21)	Developing countries	Employment potential and social inclusion; need for guarantee mechanisms	Social inclusion, microfinance
Cunningham and Craig (4, 24)	Global (platforms)	Platforms and social media as direct financing channels	Monetization, authenticity
Buitrago Restrepo and Duque (25)	Latin America	"Orange economy" and the role of PPPs in promoting local entrepreneurship	Intellectual property
African Development Bank (9)	Africa	Financing obstacles and infrastructure deficits limit growth	Inclusive growth

Source: Authors.

TABLE 2 | Key findings on financing models.

Reference	Type of financing	Key contribution	Distinctive elements
Lhermitte et al. (1)	Public + PPP	CCIs essential to gross domestic product (GDP); need for dedicated financial mechanisms	Requires fiscal incentives and specialized funds
UNESCO and UNDP (21)	Public (subsidies, microfinance)	Insufficient financing in developing countries; call for guarantee funds and co-investment	Emphasis on social inclusion and microfinance
Ganason (26); Malshina and Firsova (27)	PPP	Lifecycle approach and transparent risk-sharing	Long-term contracts and balanced risk distribution
Cicchiello et al. (28, 29)	Crowdfunding	Cultural factors and regulatory frameworks determine success	Substitution effect when traditional funding is low
Loots et al. (30)	Blockchain, Crypto, NFT	Post-COVID acceleration toward innovative financing mechanisms	Complex regulatory challenges and uneven adoption
Njuguna et al. (31)	Cultural venture capital	The HEVA Fund (HEVA) model in Kenya: flexible loans and mentoring	Fills gaps in local banking and traditional financing

Source: Authors.

(see **Figure 1**) in the context of rapid digital transformation and the integration of AI.

Axis 1: structural characteristics and sector dynamics

Global economic weight and sector diversity

Several studies document the substantial contribution of CCIs to global economic output and employment (see **Table 1**). For instance, Lhermitte et al. (1) highlight the significant value added generated by the sector while also noting a persistent imbalance between its potential and the availability of tailored financing mechanisms. Similarly, Flew and Cunningham (22) argue that the very definition of "creative industries" must be re-examined in the digital age, where the boundaries between cultural production and technological innovation are increasingly blurred. Our research reveals emerging financial models—crowdfunding and PPPs—that are fundamentally rewiring investment strategies in creative sectors.

Considering the market logic and the digital transformation

Digital transformation is reshaping industry economics, as Bakhshi and Throsby (23) compellingly demonstrate in publishing: eBooks simultaneously threaten and expand traditional markets, revealing how technological disruption is never simply destructive but complex and nuanced. Furthermore, platforms and social media are enabling a new generation of creators to bypass traditional intermediaries (4, 24). These dynamics illustrate the dual nature of digital transformation—offering new growth levers while also introducing risks of increased market fragmentation.

Regional disparities and growth potential

Empirical studies emphasize significant regional differences in the development of CCIs. UNESCO and UNDP (21) stress that in emerging economies, CCIs are vital for generating employment and fostering social inclusion; yet, access to conventional financing remains limited. In Latin America, the "orange economy" model (25) illustrates how cultural creativity can drive local entrepreneurship—provided that supportive policies (fiscal incentives, dedicated funding programs) are in place. In contrast, Africa's high creative potential is often hindered by inadequate infrastructure and an underdeveloped legal framework (8).

Axis 2: financing models and public–private hybridization

Public financing: limitations and complementarities

Historically, public subsidies have been critical in supporting CCIs given their intangible and cultural nature (1). However, as CCIs expand, traditional public funding often proves insufficient or misdirected (see **Table 2**). The Creative Economy Report (21) documents the scarcity of appropriately tailored financial instruments in developing regions, suggesting that mechanisms such as guarantee funds and microfinance are essential for nurturing local creative entrepreneurship.

PPPs

PPPs have been identified as a strategic means to combine public resources with private capital, thereby distributing risks and incorporating industrial expertise (26, 27). In both Latin America and Africa, where market fragmentation and informality are prevalent, PPPs are particularly promising in facilitating sustainable investment in CCIs.

About diversifying financing tools

The evolution of alternative financing instruments such as crowdfunding (28, 29), blockchain-based financing, and non-

fungible tokens (NFTs) (30) announces a new era of financial innovation. As a result, alternative funding mechanisms offer a lifeline for independent creators by giving license to capital access in contexts where conventional financial systems are lacking. These innovative approaches democratize resources by transforming economic barriers into opportunities for creative entrepreneurs.

Axis 3: digitalization, AI, and value chain reconfiguration

Market dynamics redefined

In as much as digitalization expands revenue channels like streaming and eBooks, it reconstructs creative ecosystems. Bakhshi and Throsby (23) reveal how digital formats simultaneously threaten and enrich traditional markets. Social platforms now hinder intermediary barriers by creating direct creator-audience connections (4, 24).

AI integration in the creation process

AI-powered "AI-in-the-loop" systems are transforming creative workflows as they add human ideation and prototypes (32). Therefore, this technological integration raised profound questions about intellectual property and the evolving boundaries of human creativity (33, 34), demanding nuanced regulatory responses.

Axis 4: public policies, regulation, and resilience perspectives

Cultural policy: balancing innovation and diversity

Research as presented by Verdugo (35) and O'Brien (36) shows the delicate challenge of cultural policies through navigating economic competitiveness while preserving cultural richness. The European Commission (37–59) and Wang et al. (60) stand for integrative approaches that put together culture across innovation, education, and diplomatic domains, which is a critical strategy for managing digital and AI disruptions.

Inclusion and adaptive governance

Real inclusivity requires nuanced policy interventions with the identification of targeted support based on capacity building, mentorship, and specialized fiscal incentives that can help counteract structural barriers and prevent digital transformation from further concentrating power among elite creative players.

Axis 5: international comparisons and African specificities

Global CCI dynamics: structural inequalities

Analyses by Lhermitte et al. (1) and UNCTAD (61) expose sharp distinctions in creative industries worldwide. In an illustrative way, developed economies enjoy robust public support and concentrated investments while emerging regions craft resilient hybrid funding models blending scarce public resources with entrepreneurial private initiatives.

African creative potential

Africa's creative sector brims with untapped potential, and it is driven by a young population and expanding digital access (20). Despite significant barriers with limited credit, high informality, and weak regulatory structures (62, 63), innovative approaches like Kenya's HEVA Fund (HEVA) initiative (31) demonstrate how targeted PPPs can catalyze transformative change.

Lessons from Latin America and ASEAN

Experiences from Latin America, for instance the "orange economy" (25), and the diverse models observed in Association of Southeast Asian Nations (ASEAN) (64) underscore the need for regionally tailored approaches. These examples point out that effective resilience in CCIs requires coordination among public, private, and international actors, as well as the adaptation of digital and cultural policies to local realities.

Synthesis and theoretical implications

The comparative analysis across the above-mentioned axes reveals that as the CCIs own extraordinary creative and economic potential, they remain structurally fragile due to factors such as intangible production, volatile demand, and regional disparities. The literature constantly points out the importance of:

- Diversifying financing sources,
- Embracing digital transformation,
- Integrating AI with robust governance,
- Enhancing market adaptability, and
- Tailoring public policies to regional contexts.

Together, these interdependent factors form the basis for the theory we are building—a theory that will culminate in a quantitative model to assess and enhance the resilience of CCIs in the digital and AI-driven era.

In summary, our thematic comparative analysis provides an argumentative foundation for our emerging resilience theory. By integrating evidence across structural, financial,

digital, regulatory, and international dimensions, we highlight the multidimensional challenges facing CCIs and the strategic levers that can reduce their inherent fragility. This synthesis not only lays the groundwork for the development of our theoretical framework but also offers actionable insights for policymakers and stakeholders seeking to foster a more sustainable and inclusive cultural economy.

Discussions

The CCI are characterized by intrinsic complexity due to their intangible nature, volatile demand, and the coexistence of institutional and informal actors (1, 2). In the era of AI and Digitalization, these industries face major transformations that reconfigure the value chain, redefine creative processes, and redistribute revenue sources (23, 33). In light of these challenges, this section proposes an integrated objective function to model the financial resilience of CCIs. By capturing the interdependence of several key dimensions—financing, digital transformation, AI integration coupled with governance, and market adaptability—this model quantifies the level of fragility or, conversely, the resilience of the sector.

Proposition of an integrated financial resilience model

Model formulation

We define the overall **resilience** $\Re$ (see **Figure 2**) (the inverse of fragility) as a product function of several indices, each representing a strategic lever identified in the literature. Specifically, we propose:

$$\Re = x_{fin}^{\alpha} x_{dig}^{\beta} (x_{AI}.x_{gov})^{\gamma} x_{mkt}^{\delta} \quad (1)$$

where[1] :

- x_{fin} represents the financial resilience index, integrating the diversification and adequacy of funding sources (public subsidies, PPP, crowdfunding, venture capital, microfinance, etc.).
- x_{dig} measures the degree of digital transformation, i.e., the adoption and integration of digital technologies (streaming platforms, eBooks, social media, blockchain, NFTs) within the CCI value chain.
- x_{AI} quantifies the integration of AI into creative processes (e.g., using "AI-in-the-loop" systems for ideation or prototyping).
- x_{gov} denotes the governance and institutional support index, which encompasses the quality of regulations, protection of intellectual property rights, transparency in PPPs, and training of industry actors.
- x_{mkt} evaluates the adaptability of actors to local and global market changes, incorporating the flexibility of business models and the capacity to respond to crises (e.g., COVID-19).

The parameters $\alpha, \beta, \gamma, \delta > 0$[2] represent elasticities—i.e., the relative importance of each dimension in building overall resilience. The multiplicative nature of the model implies that a weakness in any single index will lead to a disproportionate decrease in $\Re$ reflecting the cascading vulnerability of CCIs.

The **fragility** f is defined as the inverse of $\Re$:

$$f = \frac{1}{\Re} = \frac{1}{x_{fin}^{\alpha} x_{dig}^{\beta} (x_{AI}.x_{gov})^{\gamma} x_{mkt}^{\delta}} \quad (2)$$

Optimizing $\Re$ (or equivalently minimizing f) allows us to identify which levers need strengthening to mitigate the financial fragility of the CCIs.

Theoretical justification and implications of the components

To clarify the role of each dimension and their interrelations, **Table 3** summarizes the variables, their descriptions, expected effects on overall resilience R (overall resilience), and supporting references.

The multiplicative nature of $\Re$ is essential: it conveys the idea that a deficiency in any single component (e.g., low institutional support, x_{gov}) compromises the entire system even if other dimensions are strong. The interaction between x_{AI} and x_{gov} is particularly significant, emphasizing that the benefits of AI integration are realized only when accompanied by an appropriate regulatory framework.

[1] We recommend that researchers first identify a set of relevant indicators that accurately represent each dimension—for example, funding sources for financial resilience, digital technology adoption for digital transformation, usage of AI for creative processes, the quality of regulatory frameworks for governance support, and the responsiveness to market changes for market adaptability. Data should be sourced from reputable government reports, industry surveys, and international organizations. Once collected, these diverse measures ought to be standardized to ensure comparability and then assigned appropriate weights based on expert judgement or statistical techniques such as principal component analysis. Finally, the standardized and weighted measures should be aggregated into a single composite score for each dimension, scaled within a consistent range. This approach transforms heterogeneous raw data into coherent indices, which can then be empirically incorporated into the overall model of resilience and fragility.

[2] To compute the elasticities in our model, we can first transform the multiplicative function $\Re$ into a linear form by taking natural logarithms: $lnf_0(R) = \alpha lnf_0(xfin) + \beta lnf_0(xdig) + \gamma [lnf_0(xAI) + lnf_0(xgov)] + \delta lnf_0(xmkt) + \varepsilon$, where ε is an error term. Using available data for each index, we then estimate the coefficients α, β, γ, and δ through ordinary least squares (OLS) regression. These coefficients are the elasticities, meaning that each one shows the percentage change in overall resilience R for a 1% change in the corresponding factor. For example, if $\alpha = 0.40$, a 1% increase in the financial index *x fin* increases $\Re$ by 0.40%. Since fragility *F* is defined as the inverse of resilience (i.e.,F = 1/ R), improvements in any index (especially those with higher elasticities) reduce fragility significantly, while a decline in a key component will sharply increase fragility. This process can allow us to interpret which factors most strongly affect the stability of the industry.

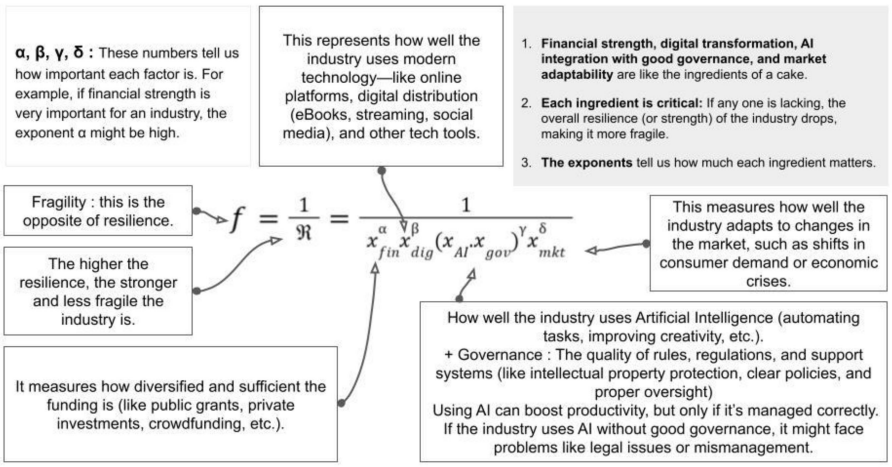

FIGURE 2 | Financial fragility model. Source: Authors.

TABLE 3 | Summary of dimensions integrated into the resilience model.

Dimension	Variable	Description	Expected effect on $\Re$	Mains works
Financing	x_{fin}	Diversification and adequacy of funding (public subsidies, PPPs, crowdfunding, venture capital, microfinance), including the informal dimension and trust networks.	Robust funding increases $\Re$ and reduces fragility.	Banks et al. (2); Lhermitte et al. (1); UNESCO and UNDP (21); Cicchiello et al. (29)
Digital transformation	x_{dig}	Adoption of digital technologies and integration of new distribution channels (streaming, eBooks, social media, blockchain, and NFTs).	Effective digitalization creates new revenue sources and enhances competitiveness.	Bakhshi and Throsby (23); Cunningham and Craig (4, 24); Li (65)
AI integration	x_{AI}	Capacity to utilize AI to support creative processes (e.g., for ideation or prototyping) while preserving human creativity.	Well-regulated AI use can boost productivity, provided it is accompanied by strong governance.	Boussioux et al. (32); Lim (33)
Governance and support	x_{gov}	Quality of public policies and regulations, protection of intellectual property rights, transparency in PPPs, and industry training.	A robust institutional framework multiplies the positive effects of technological innovations and AI.	O'Brien (36); WIPO (66); OCDE (11); UNESCO and UNDP (21)
Market adaptability	x_{mkt}	Ability of actors to adapt their business models to local and global changes, innovate in precarious environments, and manage demand volatility.	High adaptability enables actors to seize new opportunities and withstand external shocks.	Afrique Créative (38–59); Sioson and Korwatanasakul (64); Tao et al. (66); Boix Domenech et al. (68)

Source: Authors.

This integrated approach captures the multidimensional nature of financial fragility in CCIs. The advantages of the model include:

1. Comprehensive and targeted diagnosis:

By quantifying each dimension, specific weaknesses can be identified—for example, in some African contexts where informality and lack of infrastructure reduce x_{fin} and x_{mkt} (9, 62).

2. Multiplicative synergy effects:

The interaction term $x_{\text{AI}}.x_{\text{gov}}$ underscores that technological innovation (e.g., AI integration) is only beneficial when supported by clear public policies and strong governance (12, 33).

3. Flexibility and adaptation:

The elasticities α, β, γ, and δ allow for the model to be tailored to regional and sector-specific conditions. Also, in volatile market landscapes, strategic models dynamically adjust by assigning greater significance to market-driven variables to capture the nuanced fluctuations (67).

Conclusion

We've often been worried about how CCIs can simultaneously seem incredibly fragile yet teeming with untapped opportunities. This study highlights that

delicate balance, emphasizing financial constraints, digital transformation, AI integration, governance, and market adaptability represent a unified model that brings them all together. Take a look, for instance, at a neighborhood art collective transitioning its exhibitions online, suddenly discovering fresh funding streams through crowdfunded streaming events. Note that examples like this demonstrate how each facet of resilience, be it technological or financial, depends on the others.

From our perspective, one of the study's most interesting findings is that resilience is not a static checkpoint but an ongoing process that is constantly facing changes in response to technological, regulatory, and economic shifts. Even though AI and digitization hold promise for remarkable growth, it can droop if there is not careful governance and solid financial foundations. Consequently, policymakers, investors, and industry leaders must embrace a wide-angled view that avoids pitting economic imperatives against creative autonomy.

The adoption of this integrated framework can help stakeholders to expose structural vulnerabilities, allocate resources with greater precision, and implement targeted interventions that cultivate a truly robust and future-ready cultural ecosystem. In short, giving support as far as the resilience of CCIs is concerned is more than a purely financial pursuit, and it is a commitment to safeguarding our collective cultural heritage in a rapidly evolving digital era.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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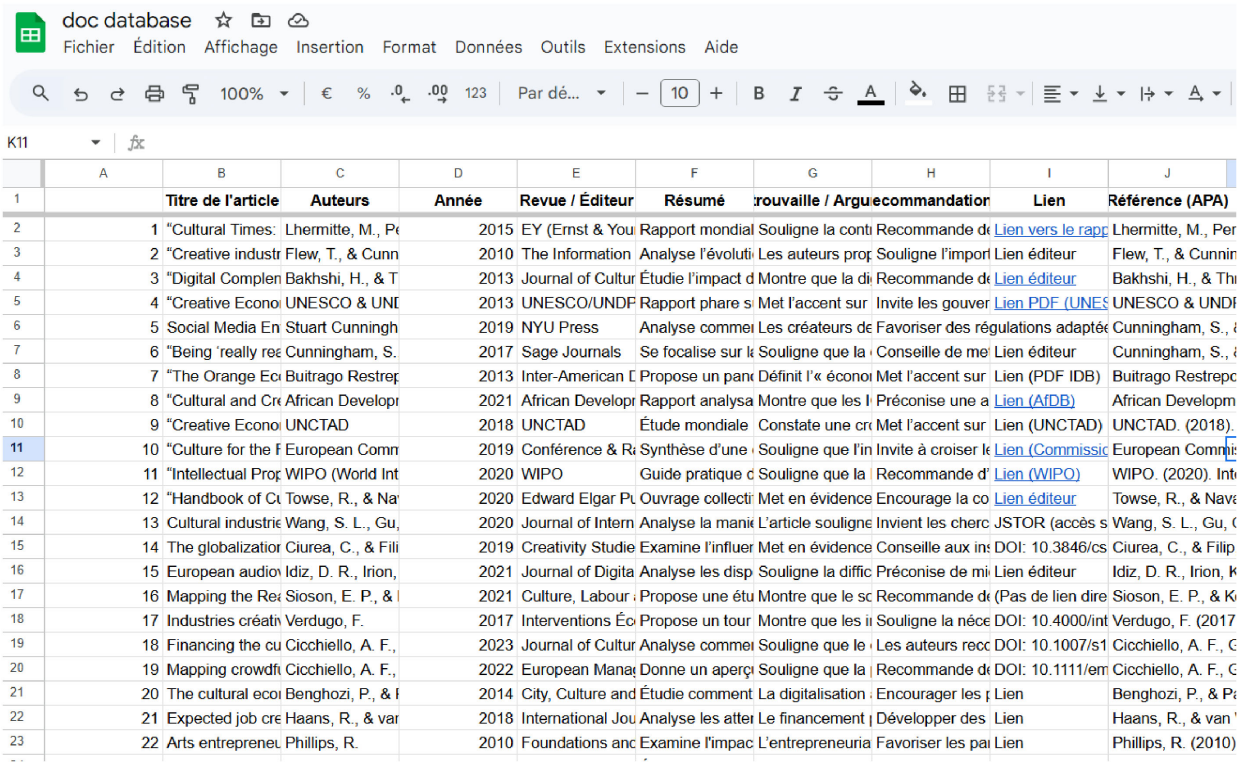
ANNEX – database of used papers

You can check out the annex for the complete database of articles we drew on for this research. It includes everything from author names and publication years to sources, short summaries, and direct links.

Database link: https://docs.google.com/spreadsheets/d/1LJE6JKTbFT3_0wwJOaNAfefHRGgGEHO-iKrve-djzLg/edit?usp=sharing



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Fichier Édition Affichage Insertion Format Données Outils Extensions Aide

	A	Titre de l'article	Auteurs	Année	Revue / Éditeur	Résumé	rouvaille / Argu	ecommandation	Lien	Référence (APA)
2	1	"Cultural Times:	Lhermitte, M., Pe	2015	EY (Ernst & You	Rapport mondial	Souligne la conti	Recommande de	Lien vers le rapp	Lhermitte, M., Per
3	2	"Creative industr	Flew, T., & Cunn	2010	The Information	Analyse l'évoluti	Les auteurs prop	Souligne l'import	Lien éditeur	Flew, T., & Cunnin
4	3	"Digital Complen	Bakhshi, H., & T	2013	Journal of Cultur	Étudie l'impact d	Montre que la di	Recommande de	Lien éditeur	Bakhshi, H., & Thi
5	4	"Creative Econo	UNESCO & UNI	2013	UNESCO/UNDP	Rapport phare s	Met l'accent sur	Invite les gouver	Lien PDF (UNES	UNESCO & UNDI
6	5	Social Media En	Stuart Cunningh	2019	NYU Press	Analyse comme	Les créateurs de	Favoriser des régulations adaptée		Cunningham, S., &
7	6	"Being 'really rea	Cunningham, S.	2017	Sage Journals	Se focalise sur l	Souligne que la	Conseille de me	Lien éditeur	Cunningham, S., &
8	7	"The Orange Ec	Buitrago Restrep	2013	Inter-American D	Propose un pan	Définit l'« econo	Met l'accent sur	Lien (PDF IDB)	Buitrago Restrepo
9	8	"Cultural and Cr	African Developr	2021	African Developr	Rapport analysa	Montre que les I	Préconise une a	Lien (AfDB)	African Developm
10	9	"Creative Econo	UNCTAD	2018	UNCTAD	Étude mondiale	Constate une cr	Met l'accent sur	Lien (UNCTAD)	UNCTAD. (2018).
11	10	"Culture for the F	European Comn	2019	Conférence & Ra	Synthèse d'une	Souligne que l'in	Invite à croiser le	Lien (Commissic	European Commis
12	11	"Intellectual Prop	WIPO (World Int	2020	WIPO	Guide pratique d	Souligne que la	Recommande d'	Lien (WIPO)	WIPO. (2020). Int
13	12	"Handbook of Cu	Towse, R., & Nav	2020	Edward Elgar Pu	Ouvrage collecti	Met en évidence	Encourage la co	Lien éditeur	Towse, R., & Nava
14	13	Cultural industrie	Wang, S. L., Gu,	2020	Journal of Intern	Analyse la manie	L'article souligne	Invient les cherc	JSTOR (accès s	Wang, S. L., Gu, C
15	14	The globalizatior	Ciurea, C., & Fili	2019	Creativity Studie	Examine l'influer	Met en évidence	Conseille aux ins	DOI: 10.3846/cs	Ciurea, C., & Filip
16	15	European audio	Idiz, D. R., Irion,	2021	Journal of Digita	Analyse les disp	Souligne la diffic	Préconise de mi	Lien éditeur	Idiz, D. R., Irion, K
17	16	Mapping the Rea	Sioson, E. P., &	2021	Culture, Labour	Propose une étu	Montre que le sc	Recommande de	(Pas de lien dire	Sioson, E. P., & Ku
18	17	Industries créati	Verdugo, F.	2017	Interventions Éc	Propose un tour	Montre que les i	Souligne la nécé	DOI: 10.4000/int	Verdugo, F. (2017
19	18	Financing the cu	Cicchiello, A. F.,	2023	Journal of Cultur	Analyse comme	Souligne que le	Les auteurs recc	DOI: 10.1007/s1	Cicchiello, A. F., C
20	19	Mapping crowdfu	Cicchiello, A. F.,	2022	European Manag	Donne un aperç	Souligne que la	Recommande de	DOI: 10.1111/em	Cicchiello, A. F., C
21	20	The cultural ecor	Benghozi, P., & I	2014	City, Culture and	Étudie comment	La digitalisation	Encourager les p	Lien	Benghozi, P., & Pa
22	21	Expected job cre	Haans, R., & var	2018	International Jou	Analyse les atter	Le financement p	Développer des	Lien	Haans, R., & van '
23	22	Arts entreprenet	Phillips, R.	2010	Foundations and	Examine l'impac	L'entrepreneuria	Favoriser les pai	Lien	Phillips, R. (2010)